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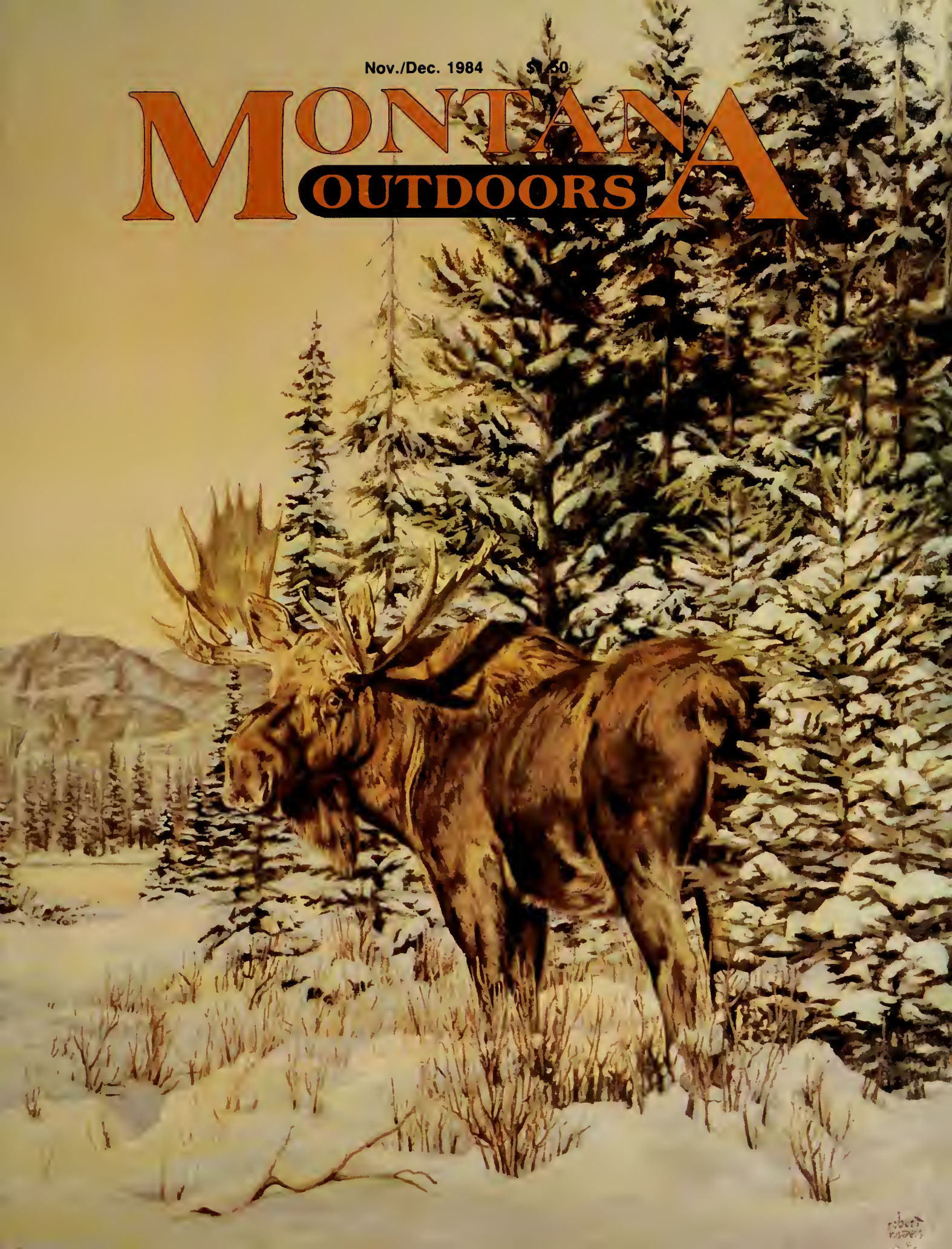
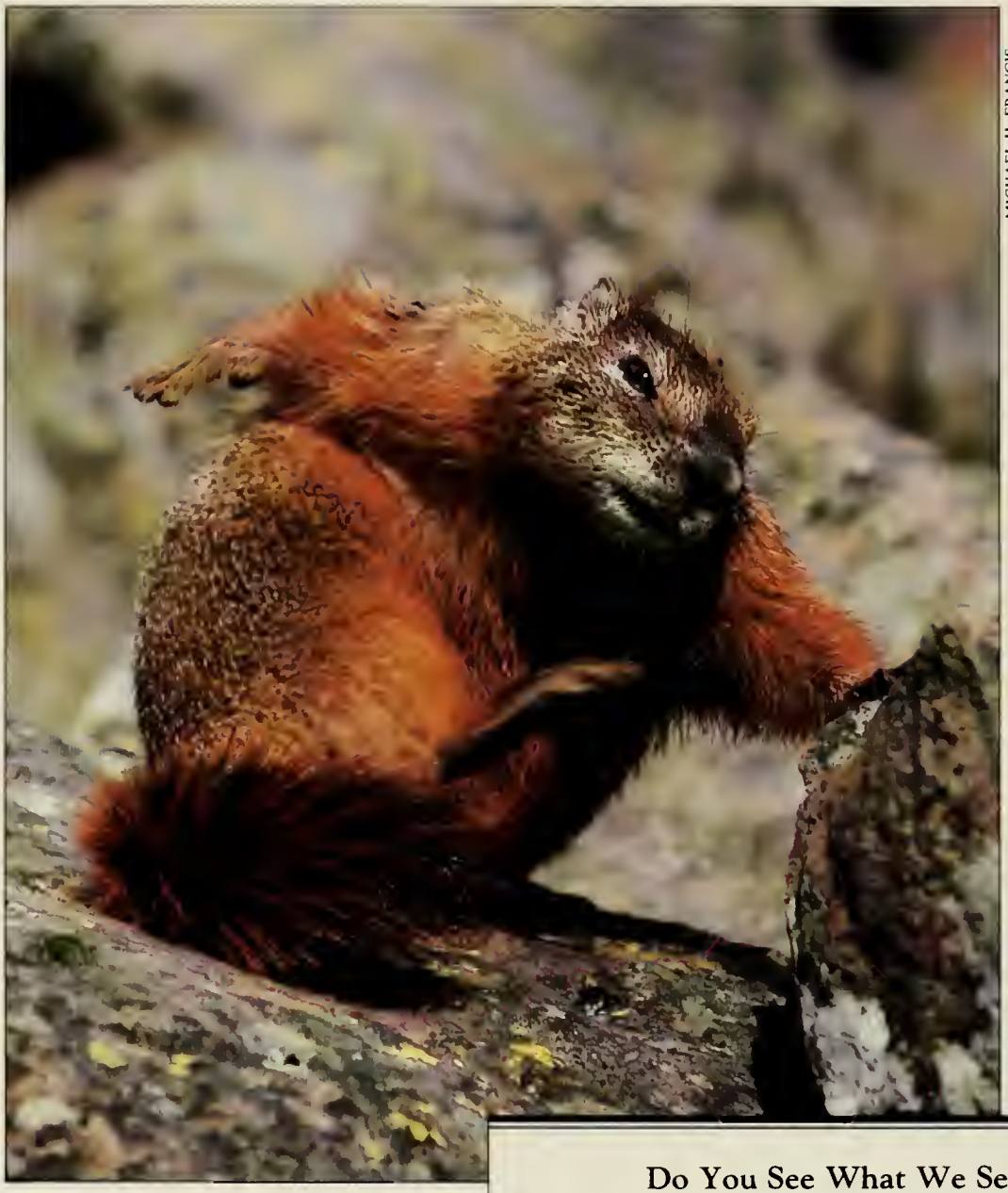
MONTANA OUTDOORS





MICHAEL H. FRANCIS

Do You See What We See?
Natural Magic
Magical Nature

Coming in January . . . the Montana Outdoors
Special Photo Issue

MONTANA OUTDOORS

Nov./Dec. 1984, Vol. 15, No. 6
(USPS 360 280)

Front Cover
Robert Neaves' front-cover painting of a moose serves as an appropriate introduction to a special 12-page section in this issue, an identification guide to Montana's big game mammals.

Inside Front Cover
Michael H. Francis' photograph of a marmot serves as an appealing reminder that the Jan./Feb. 1985 issue will be full of other equally appealing subjects: the Fourth Annual Special Photo Issue.

Back Cover
Keith A. Szafranski's back-cover photograph captures the mainstay of North American waterfowling in flight. However, the mallard may be in serious jeopardy because of reduced nesting success over large portions of its breeding range.

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A Christmas Legacy

by Tom Butts
illustrated by Diane Nugent

Dear Jeremy,

I've thought a lot about what I wanted to give you this Christmas. I know you had your heart set on the blue down vest we saw in the catalog. Sure, the vest would keep you warm, and you could probably wear it for a year or two. But instead, this year I wanted to give you something that would last forever. Something you could look back on, and read over, and think about as you grow older. That's why I'm writing you this letter.

One of the greatest gifts I could ever give you is an appreciation for the outdoors—for wildlife, rocky ridges, prairie sunrises. I worry sometimes that since you and your mother moved away, you won't have enough opportunity for these experiences that have meant so much in my life. One of the most important items I can give you is a set of values, or rules to live by. I think outdoor experiences help a person develop the kinds of values that are very important in today's world.

I'll never forget many of the things you and I have done together in the outdoors in the seven years you've been here. When you were very young, I used to carry you up a trail in the Bitterroot Mountains to pick huckleberries. You would sit happily in front of a bush loaded with berries and pick every one within reach. Then I had to find you a new bush. By the time my bucket was half full, you were as fat and happy as a black bear in the same situation, and you were stained with purple juice from ear to ear and chin to knees. Your wonder and excitement at a passing butterfly or red-tailed hawk filled me with joy.

There were many times we went hunting and fishing. You sat in the goose pits at Ninepipe with me when you were two. You were completely satisfied to watch the ducks and geese pass over us a mile up, while you ate chocolate chip cookies and guzzled hot chocolate from the thermos. You were three when you caught your first trout at the pond in the Little Snowy Mountains. You were all smiles, and you sure rubbed it in that your trout was bigger than any of mine. At four, you fell asleep under a pile of straw while we waited for the geese to come to our decoys in an eastern Montana wheat field. I could hear your soft sleeping sounds as the geese winged in, the wind whistling in their pinions as they talked back to our calls.

This summer, I was so proud of you on our six-mile hike into the Beartooths. You mastered hopping from rock to rock as we crossed the streams, and you carried your pack like a veteran, without complaint. I will never forget your first attempts—at your own insistence—at using my fly rod.

The outdoors is for sharing, and for learning, and for teaching someone we love about it. Love and respect for wild things and wild places are lessons I have learned from the outdoors.

Many people don't understand how someone who says they love animals can also hunt them. I have found my love and respect for life increasing as I have learned to be a better hunter and trapper. To participate in the life and death of nature helps put things in perspective. I know I can kill, and it is a big responsibility. If I am to do that, I must do it conscionably and with as much respect for my quarry as I can muster. We humans have been hunters for a long time. When I take to the fields to hunt, I feel these old inheritances. I slow down and tune in to whatever is around me. Yes, I could probably do what many people do. Drive along the road until I see something, then bail out and blaze away. But I choose a more personal way of

hunting. Remember when we talked about Indians this past summer? We learned how counting coup was much more respected than just killing your enemy. In some ways, it is possible to "count coup" with the game you choose to hunt. It turns out it is not what *you kill, but* how *that becomes important.*

Self-respect, then, is another value you can gain by spending time in the outdoors. The more you succeed in your pursuits of hiking, hunting, fishing, or just paying attention and learning the ways of the wild places, the more you come to respect yourself, your abilities, and your place in the universe.

To know that you can take care of yourself—that you can go nearly anywhere in the outdoors and get along just fine—gives you a sense of freedom and security. You know what to do when a nasty thunderstorm boils over the ridge to the west and sends lightning crashing down around you and winds ripping through the firs. You know what to do when you come across a grizzly track or see a mountain lion way off in the distance, or when the mosquitoes are thicker than flies around the barn, or when an early snowstorm catches you miles from your truck. Knowing what to do means not only security, but also self-confidence and self-respect.

Endurance is something else you'll learn if you spend much time in the outdoors. When you've carried a pack and a rifle for miles over steep, rugged country and finally bag your elk, then have to pack it and all your gear out to the trail head, you'll learn endurance. You'll learn it when that mountain peak has been climbed, but the day is fading and it's still miles to camp. You'll learn it when you slog through a marsh, knee-deep in mud, carrying your shotgun, shells, thermos, two dozen decoys, and a few fat mallards and a Canada goose over your shoulder. With a biting wind spitting snow out of the North, frozen fingers and toes, ice on your mustache and a smile on your face, you'll know about endurance. You'll know that having to work hard is something that makes it all worthwhile.

While I lived in Colorado, a mountain more than 14,000 feet high taught me a valuable lesson. I wanted to climb that mountain in the worst way. Every time I got to a point where I could look down, I looked down thousands of feet on either side to the lakes, trees, and rocks far below. When I looked up, I looked up a thousand feet higher to the summit and saw nothing but a jumble of rocks and cliffs. I was overwhelmed, and I felt I could not continue.

One day, I decided to look at the mountain in a different way. I looked only at the problem directly in front of me. How do I get

continued on page 30

Where Have All The Mallards Gone?

Some of my fondest childhood memories are those of duck hunting with my father and brother on the marshes of west central Minnesota. Strangely, those early morning bouts with the cold air and stinking mud of the sloughs near my home were some of the best times of my life.

By virtue of the large numbers of wetlands in the area, a lot of resident or locally raised ducks were around on opening day. This made for some excellent shooting for a short time, until these local ducks had either been "educated" or had migrated out of the area. Hunting became progressively poorer as the season continued, until late season migrants briefly passed through the area.

I still remember sitting in my blind on the marsh, searching the horizon for any ducks which might be headed my way, wondering how many ducks were in nearby marshes where others hunted. When there weren't any ducks in my slough, I figured there must be some over the hill or on some other nearby lake.

In later life, I discovered this type of "over-the-hill" thinking about fall waterfowl distribution has some validity. Since serving on the Central Flyway Technical Committee (which includes representatives from nine other states south to Texas and New Mexico), I have had the opportunity to closely study waterfowl populations. In some parts of the Central Flyway, ducks, geese, swans, and cranes do congregate in almost unimaginable numbers, while sizable areas in between have few birds, if any at all.

DAVE BOOKS

But I have also learned that the "over-the-hill" philosophy is not always reliable, as we are now discovering with America's most popular duck, the mallard. No longer does this superb bird occur in the abundance which so typified it during the settlement of mid-America. No longer is it safe to assume that if there are no mallards in *your* slough, there must be a flock "over the hill."

The North American mallard population is declining. If continued at its present rate, this trend could result in a very small and perhaps unhuntable mallard population in the not too dis-

by Tim Hinz

DAVE BOOKS

tant future. The facts about this decline, the reasons for its occurrence, and the possible means of alleviating it are as perplexing as they are complex.

The facts are these: An estimated 50% of the continental waterfowl population nests in the northern prairies, primarily in what is known as the Prairie Pothole Region. These glacial potholes occur mostly in portions of northeastern Montana, western Minnesota, North and South Dakota, and the southern portions of the prairie provinces of Canada (Alberta, Saskatchewan, and Manitoba). Since settlement of this region in the late 1800s, the conversion and intensive cultivation of prairie sod has resulted in steadily declining uncultivated grassland. In North Dakota, for example, as of 1860 no modern plow had yet broken the virgin prairie sod. Now, less than 20% of the original grassland of that state remains. Because North Dakota represents some of the most attractive waterfowl breeding habitat in North America, this degree of habitat loss has serious implications for prairie-nesting ducks. The grasslands of eastern Montana, South Dakota, and the Canadian prairies are also dwindling rapidly.

The mallard—the mainstay of North American waterfowling since market hunting days—may now be in serious jeopardy. Wetland drainage and intensified farming practices have seriously reduced mallard nesting success over large portions of the breeding range.

MIKE LOGAN

For the mallard and other ground-nesting ducks, intensified farming is a many-headed dragon. Not only are potholes being drained, filled, and grazed, but roadsides are continually being burned, mowed, and farmed. Rock piles utilized as nest sites by mallards are now being buried as agricultural demand increases. Where does this leave the hen looking for a place to nest? The only alternative is to nest in cropland areas (alfalfa and small grain stubble fields) and in small isolated areas where some grass cover remains. Unfortunately, duck nesting success in such habitats is poor. This is due both to the mechanical destruction of nests and loss of some hens to farming operations, and to high predation in such small tracts of remaining grassland. Predators such as red foxes and skunks are also restricted to living in these same small remaining tracts of grassland. The ducks come out the losers.

Recent radiotelemetry studies of breeding mallards in central North Dakota, the heart of North America's best pothole country, have shown nesting success less than 10%—a rate insufficient to maintain the mallard population in that area. A 1983 study funded by Central Flyway states gathered mallard nesting information over a wider area and found poor nesting success to be a widespread problem. In North Dakota, where three study areas were examined, the mallard nesting success ranged from 3% to 6%, and for all ducks from 8% to 15%. In South Dakota, mallard nesting success ranged from 3% to 12% for three areas, while nesting success for all ducks ranged from 4% to 19%. In Montana, mallard nesting success ranged from 16% to 26% for three areas, while success for all ducks ranged from 14% to 42%. In summary, with the exception of eastern Montana, mallard nesting success was insufficient to maintain the population, even without hunting. Similar research in the prairie provinces of Canada has shown nesting success as low as 5% and 10% in some areas.

One might ask: "Given the poor nesting success, why are any mallards at all left?" One explanation sometimes heard is that there are still enough isolated breeding areas (such as in eastern Montana) where nesting success is very good; they make up

for a lot of mediocre production in the majority of the prime breeding areas.

Yet the total population appears to be losing ground. For example, from 1955 to 1960, the mallard breeding population was estimated to average slightly more than 11 million. During the most recent 10-year period (1974-1983), the mallard breeding population averaged less than 8 million, a decrease of 34%. Some claim that a period of abundant water on the prairie will result in the population rebounding. But in the meantime, the availability of secure nesting sites—so critical to nesting ducks—continues to decline. With this loss of secure nesting sites, it is questionable that such a period of abundant water would produce a marked or sustained increase in the mallard population.

How important is Montana in terms of total production of mallards in the United States? From 1975 through 1982, the mallard breeding populations in North Dakota, South Dakota, and Montana averaged 481,500, 348,800, and 348,600, respectively. Considering the fact that mallard nesting success in Montana in 1983 was three to four times that of selected areas in the Dakotas, it is likely that Montana mallards outproduced the Dakota mallards by two or three times. Why the disparity? Basically, eastern Montana still has a lot of uncultivated uplands providing nesting cover for ducks. Further, nesting ducks and predators are dispersed over a larger area rather than packed into small grassland tracts as in North Dakota. Although Montana has a limited amount of attractive waterfowl pair habitat (mostly stock ponds, creeks, and rivers), ducks attracted to these areas have comparatively high nesting success. In brief, Montana—at least in wet years—is very likely the largest producer of mallards in the United States! Unfortunately, as the nest success in other states and provinces continues to falter, mallards once oriented to Montana breeding areas will probably be drawn to those areas with more attractive pair habitat. But they will then experience reduced nest success. Thus, the total picture in terms of the continental mallard population must be addressed by Montana too, if we are to continue to

LARRY DECH

produce and harvest mallards as we have in the past.

During the 1960s, the Viet Nam War was marked by many songs of social protest, one of which was "Where Have All The Flowers Gone?" lamenting the disappearance of young men from households across the country. Now waterfowlers and other observers across the flyways are beginning to ask "Where have all the mallards gone?" as their favorite hunting spots no longer attract the number of mallards they once did. Again, one can adopt the "over-the-hill" philosophy, but discussions with other state waterfowl professionals have convinced me that the mallards are not somewhere else. They are, in fact, gone. Some of the best waterfowl areas in this state—the Bighorn River, the Yellowstone River, and Freezout Lake—do not hold the numbers of mallards they did 10 years ago. Outside the state, even at such famous fall and winter mallard haunts as the Platte River Valley in Nebraska, mallard numbers are down.

The U.S. Fish and Wildlife Service's (USFWS) "Waterfowl Breeding Population Survey" for Montana this year clearly states the situation: "Survey results indicate the lowest breeding population yet recorded...." The breeding duck picture in prairie Canada this spring is equally bad, partly the result of poor water conditions. Water scarcity is not the sole problem, however, as Canadian Wildlife Service reports re-echo the observation that "recent fall flights of mallards are among the lowest ever recorded."

So the problem is sizable and real. The question logically becomes one of what is being done about it. The various agencies responsible for correcting the problem are taking differing viewpoints, embracing those statistics which seem to support their perception of the problem.

The Central Flyway states, guided by the Central Flyway Council, are following three courses of action in dealing with the problem. The first deals with hunting regulations. It is expected that in 1985 most or all of the states of the Central Flyway (as well as some in the Pacific Flyway) will attempt to restrict their mallard harvest, particularly hens; this will probably be accomplished through a restriction in hen bag limit and a shorter duck season. In Montana, restrictions were begun this year, with the hen and drake mallard bag limit significantly reduced in both the Central and Pacific flyways portions of the state.

The second course of action involves creating computer models. In cooperation with the Northern Prairie Research Center in Jamestown, N.D., the Central Flyway states are attempting to identify what the mallard population is doing. By providing the Northern Prairie researchers with information on mallard nesting success and habitat across the breeding grounds, the Central Flyway states hope to gain insight into what management activities might produce more mallards at the least possible cost. The 1983 duck nesting study, the results of which were given above, represents one such effort. Management options under consideration include construction of nesting islands in already existing water areas, no-till or minimum till farming to reduce mechanical destruction of nests, and construction of artificial nest baskets.

The third course of action involves attempts by the Central Flyway states to maximize mallard production on lands already managed for that purpose. Over the past 20 years, the Small Wetlands Acquisition Program of the USFWS has protected over 1.6 million acres of wetlands at a cost of over $71 million. Yet, as mentioned earlier, it appears the mallard population has declined during this period. Obviously, the cumulative amount of nesting habitat lost on private land during that period has outpaced this acquisition program. Unless these areas are intensively

Despite the fact that Montana has relatively little mallard breeding habitat compared with the Dakotas, nesting success is considerably higher. It is likely that Montana—at least in some years—is the largest producer of mallards in the United States.

LARRY DECH

GORDON DIETZMAN

managed to become "duck factories," the mallard will probably continue to decline.

Thus, the answers to the questions asked of the Northern Prairie Research Center are crucial. Waterfowl management professionals must know where and what to do to maximize the production of mallards on lands they manage.

Ducks Unlimited (DU) is yet another player in this drama, one which just recently has begun to authorize funding for work on breeding areas on the U.S. side of our northern border. DU's new efforts could result in more mallards from U.S. breeding areas. At least two DU projects in Montana (Big Lake in Stillwater County and Fox Lake in Richland County) are in various states of planning for development to maximize duck production. Both are all or partially owned by the Department of Fish, Wildlife and Parks and other public agencies.

Probably the biggest factor which has allowed the mallard situation to degenerate to this point is the fact that professionals disagree on whether it is a real decline or just a temporary response to varying water conditions. This is further complicated by the fact that the mallard is a migratory bird which nests over millions of acres of North American wetlands, making surveys and accurate censuses nearly impossible.

As the amount of grassland continues to dwindle, what remains will become even more critical to nesting ducks. However, some professionals believe that the various waterfowl management agencies in North America *do* control enough public land so that intensive management could result in enough mallards to reverse the population trend. Other early nesting ducks, notably the pintail (which also seems to be declining in some areas) will also benefit.

Critics might say that many of these plans are not new, that most of these corrective measures have been tried. This is true. But they were not applied on a large enough scale in terms of funds invested or area covered to produce the desired result. Recovery of the mallard population through intensive management will be expensive. Bills currently before the U.S. Congress are attempting to generate funds for the continued preservation of wetlands. But such programs alone will not do the job for the mallard. Intensive management must accompany or even precede any further acquisition, as the past 20 years have proved. The days of the "cheap duck"—once produced as a by-product of early agriculture on the prairies—are gone. We must now expend funds and labor to turn out ducks on the limited habitat remaining. Another consideration will have to be the role or contribution of hunting to the overall problem of mallard decline.

Although the picture is gloomy, there *is* hope. Waterfowl managers in the Central, Pacific, and Mississippi flyways are beginning to agree on the need for immediate action. Since the mallard responds favorably to intensive management, greater numbers could result from future efforts. Because it is the most popular waterfowl species in North America, the mallard certainly merits such attention. Within the next 10 years, we just might begin to see the fruits of these new efforts to produce more mallards. Once again, they just might return to a level of abundance which will quiet the cries of "Where have all the mallards gone?" ■

DEER HUNTING: The Way We Were

A while back, before I acquired the affluence to plunk down enough cash for a sportsman's license each spring, thereby saving six more trips to the local sporting goods store, I was taking part in the old annual "Buying-Your-Deer-Tag-at-the-Last-Minute" ritual. Several other hunters, evidently admiring the seriousness with which I approached the task, stood behind me. We were all quiet, lost in thoughts of Opening Dawn (15 hours and 34 minutes away), when a commotion kicked up at the end of the queue. A middle-aged guy, apparently a Montana native of long standing, had just gotten word that deer tags now cost $7.

This guy was very unhappy. "Deer hunting's sure as hell changed around here," he glowered. The rest of us neither agreed nor disagreed, but shuffled our feet slowly, retreating to private thought.

Remember, for a moment (if you've hunted here long enough): Even the smell of deer hunting in Montana has changed over the past 10 or 20 years. Oh, occasionally traces of it waft by—that precise, metallic mixture of cold dawn, gun steel, and dry-frosted grass—somewhere on a roadless ridge, trapped like a museum piece between an interstate highway and our modern expectations. But it's getting harder to find that iron aroma, perhaps because it simply cannot be smelled by civilized nostrils.

The sounds are gone, too: the disintegrating whine of a '52 Ford pickup's transmission in compound low, miles up a logging track; the clink of new shells dropping into a pocket (nobody keeps loose shells in their Levis anymore; besides, the brass is encased in plastic); the considered, cadenced words of a rancher, telling you where and how to get to a certain ridge or pasture and which gates to leave open and which to close.

The *feels* are even missing: the use-smooth stock of an issue Springfield is now a urethaned magnum's; the spring prodding your jeans through the old pickup's seat is now a cushiony bucket; and hunters crackle in bright plastic.

Even the skills are disappearing. Many of us don't hone a hunting blade with a simple Arkansas stone anymore—we use ceramicized sticks. There's no need to chain up the old truck by feel in the pre-dawn dark; we have full-time four-wheel-drive, computer-designed tires, and a winch to get us up the mountain, farther than we could have ever imagined in the old pickup. We don't even need to stalk or still-hunt much if we don't want to, because in many areas there are so many hunters that something will spook by if we just wait.

And, aside from the high cost of a deer tag, there's a whole list of complaints we repeat like litanies: There are too many hunters; there are too few places to hunt; the "out-of-staters" are killing "our" game.

Perhaps. But with all that considered, I disagree some with our tag-buying, price-moaning acquaintance. Deer hunting hasn't changed, even in Montana, not since the first hungry cave person tried to catch a handy buck. But something else has.

Think hard: Twenty years ago, it was hard to find a "POSTED" sign. Our valleys keep filling with subdivisions. We have the shiny semi-cannons, the $12,000 four-wheel-drive. We demand development so we can stay steadily employed—work that brings more hunters to Montana—and also demand that "out-of-staters" keep out of "our" state, while fewer and fewer of us are natives, whatever that means, each year.

It's human nature to want things both ways. It's human nature to put the blame for change elsewhere, on high-priced deer tags, on nonresidents, on locked gates, on energy development. It's also human nature to deny the truth when it might be painful. So close your eyes, 'cause here it is:

Deer hunting hasn't changed in Montana. We have.—*John Barsness*■

Hunting on Private Land: A Privilege

Ask any dedicated, serious hunter how he prepares for the upcoming season, and he will probably recite an unending list of activities that occupies nearly all of his spare time for several weeks before the opening. The list will include oiling boots; sharpening knives; reloading ammunition; sighting-in rifles; assembling and checking equipment such as camping gear, backpacks, and blaze orange and other clothing; patching waders; painting decoys; and, of course, making sure he has the proper hunting licenses. His list will probably even include tuning the four-wheel drive, exercising the dog, and getting his hiking legs in shape. The list could go on and on—the successful hunter knows careful planning and preparation help improve his "luck" during the upcoming season.

Unfortunately, many hunters forget the most important item: etiquette. Not the Emily Post kind, but the farm and ranch kind. Gaining access to private land is the key to success for thousands of Montana hunters each year. A substantial percentage of Montana's game animals live on private land and, without the access granted by private landowners, many hunting opportunities provided by these animals would be unavailable. This is especially true for animals common to agricultural areas such as antelope, white-tailed and mule deer, and pheasants. The annual contribution of the private landowner to hunting opportunity cannot be over-emphasized.

While the role of the private landowner is generally considered important, few recognize its uniqueness. Not only does the property owned by the private landowner produce and support a valuable public resource, but also it provides a great deal of public hunting. The unique part is that—at best—the average private landowner receives absolutely nothing in return. At worst, he can expect a raft of problems, such as shot livestock, cut fences, flattened grass from off-road vehicle travel, and damage from senseless vandalism. Nearly all landowners have to put up with at least some inconvenience during the hunting season—ranging from early morning, last-minute requests for permission to hunt, requests to use various facilities, talking to and directing hunters, to helping out when the hunter's vehicle becomes stuck.

There are also nagging concerns in the back of the landowner's mind, including careless shooters he may be letting on his land, increased fire danger, the potential spread of weeds and, of course, the ever-present potential for livestock rustling. For many landowners, however, the most irritating aspect of a hunting season is the basic lack of courtesy and respect displayed by some hunters for the private property rights of the landowner. Unfortunately, some hunters believe it is a *right* to hunt on private land, rather than a *privilege.*

While landowner problems vary from place to place—with no guarantees that landowners will welcome hunters with open arms—there are some general dos and don'ts which, if followed, will improve a hunter's odds of gaining access to private land:

- *Do* get in touch with the landowner before you plan to hunt. Let him know who you are and ask him when and where he would like you to hunt. Pay attention to any special problems he might tell you about.
- *Don't* expect the landowner to be happy when he is awakened at 4 a.m.
- *Do* ask him where you can drive and where you should park.
- *Don't* drive off established roads and trails.
- *Do* leave gates the way you find them—either open or closed. A gate left open is perhaps one of the most common complaints of private landowners.
- *Don't* run cattle or drive them away from watering areas.
- *Do* be careful with fire in camping areas.
- *Don't* leave litter for the private landowner to pick up.
- *Do* thank the landowner for the opportunity to hunt and let him know about anything unusual you might have seen. "Extra eyes" can be helpful to him.
- *Above all,* show courtesy and consideration for the landowner's private property rights. Remember, hunting on his land is a privilege, not a right.

The Department of Fish, Wildlife and Parks recognizes the importance of the landowner/sportsman relationship. Over the past several years and in a variety of ways, the department has tried to address the problems in this relationship. The department has developed a new program that builds on past experience. Called the Cooperative Landowner/Sportsman's Program, it includes the following:

- Recognition of the important role played by private land in producing wildlife and providing access.
- Emphasis on hunter ethics in the department's hunter education program.
- Development of an insurance program to reimburse private landowners for livestock accidentally killed during the hunting season.
- Attempts to relieve the landowner of some of the burden of "administering" the hunting season.
- Improvement of trespass/liability laws to give the private landowner more protection.
- Requests for additional funding for game damage control and investigation of more effective techniques for preventing and controlling problems.

More details about this program will be presented in an upcoming issue of *Montana Outdoors.* Meanwhile, remember the most important preparation for a successful hunting trip may be the courtesy, common sense, and consideration shown the private landowner for the privilege of hunting on private land. It may be the most important single factor in improving your hunting "luck" this season.—*Gene Allen, administrator, Field Services Division*

ASK FIRST!!

to Hunt & Fish on Private Land

TOM WARREN

Colin Crider, far left, and Fred Glueckert of the department's shop crew spent many hours putting together the Hunter Education Program's portable trap—a trailer-mounted device for launching clay pigeons.

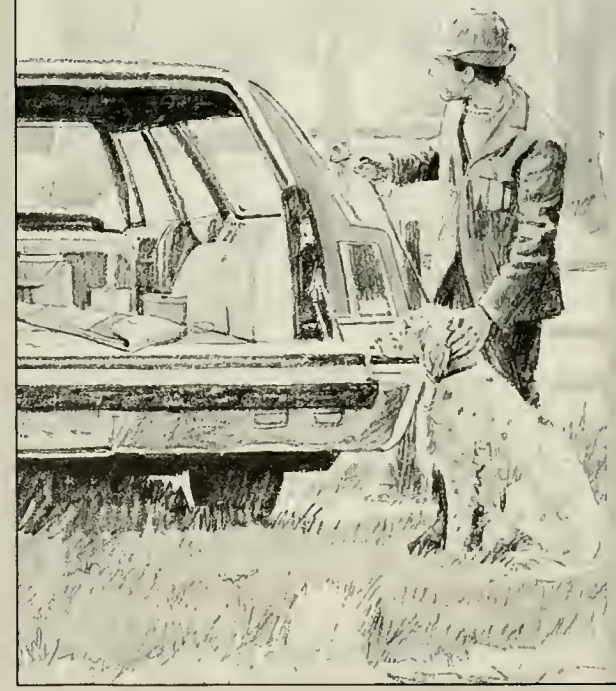
Portable Trailer Benefits Hunter Ed.

A portable trap—a trailer-mounted device for launching clay pigeons—is a valuable tool in a hunter education program. It can be used to introduce trapshooting at hunter education instructor seminars, shooting sports workshops, teacher workshops—and to student hunter education groups. After seeing such a device demonstrated at a hunter education coordinator's workshop sponsored by the Missouri Department of Conservation, benefits to Montana's program became clear.

Probably the two most impressive features of Missouri's portable trap were how easily it was transported and how well it worked. So Montana borrowed the blueprints from the Missouri department, and Fred Glueckert and Colin Crider of the department's shop crew began work. They spent many hours welding the base of the trailer and building the box which would protect and carry the trap.

Slowly, the trailer began to take shape. Late in winter of 1983, the project was finished. The main box houses the trap and power cords, and provides storage space for targets, ammunition, etc. An additional storage box is mounted on the back of the trailer; the top opens from two sides for easy access and for use when the trap is operating. The machine runs on 110-volt power and is easily hooked up to a portable generator or other power source.

The trailer provides plenty of space for hauling equipment to workshops. It is lightweight, maneuverable, and easy to pull. Most of all, it provides a usable—and also fun—teaching aid that has benefited the Montana Hunter Education Program.—*Chris Eby, hunter education program manager, Conservation Education Division*



BEFORE YOU GO

A 10-Point Checklist for the Responsible Hunter

- ☐ 1 Are you familiar with all the game laws and regulations that apply to the species you plan to hunt?
- ☐ 2 Are you familiar with your game's habits, and can you readily identify the species in the field?
- ☐ 3 Are you familiar with how properly to clean and care for your game?
- ☐ 4 If you're planning to hunt on private land, are you sure that you have permission from the landowner and understand where you may hunt on his land?
- ☐ 5 Are you familiar with the safe and proper operation of the gun you'll be using?
- ☐ 6 Is your gun clean and in good working order?
- ☐ 7 Are your gun and ammunition appropriate for the game you'll be hunting?
- ☐ 8 Is your ammunition the proper match for the gauge or caliber gun you're bringing along?
- ☐ 9 If using a rifle, is it sighted in?
- ☐ 10 If appropriate for your type of hunting, have you brought along your hunter orange vest or coat and cap?

NSSF

National Shooting Sports Foundation
P.O. Box 1075
Riverside, Conn. 06878

Missoula Girl Wins Poster Contest

Jennifer Greene of Missoula was the grand prize winner in a wildlife poster contest designed to help publicize the Nongame Wildlife Program. Jennifer was a fifth grader at Hawthorne Elementary School in Missoula when she won the contest.

Her colorful presentation shows a turtle crossing a sunny meadow dotted with wildflowers. It features the Nongame Wildlife Program's slogan, "Do Something Wild...Share With Wildlife" (see photo). Her teacher was Marva M. Gallegos.

As part of the prize, Jennifer, her parents, and sister spent a weekend in Yellowstone National Park with Vince Yannone, assistant administrator of the department's Conservation Education Division. While there, they saw elk, deer, moose, and other wildlife.

Posters were judged in each of the department's seven regions, with first-, second-, and third-place winners selected. These entries were sent to Helena for final judging where Jennifer's entry was selected as the statewide grand prize winner.

The 1983 Montana Legislature created a checkoff on the state income tax return to help the many kinds of wildlife we like just having around—like the bluebird, painted turtle, pelican, pika, and sturgeon chub. There are more than 500 such species that make Montana a special place to live. The Department of Fish, Wildlife and Parks will use money generated by the checkoff to fund education and research efforts on behalf of Montana's nongame wildlife.

Power Council Releases Film

"Journey of the Kings" is a film that describes the plight of Columbia River salmon and the regional program designed to protect them. The film traces hydropower development in the Columbia River Basin, showing how the salmon population was reduced by 69% as dams cut off spawning grounds and blocked passage of migrating fish.

When the U.S. Congress established the Northwest Power Planning Council in 1980 to forecast and plan the region's electrical energy needs, it gave the council another charge: to "protect, mitigate, and enhance" the fish and wildlife affected by hydroelectric development and operations within the basin. The Columbia River Basin Fish and Wildlife Program is the council's response to that mandate and the subject of this film. The salmon and other wildlife in the region are the stars. The setting—from streams as far inland as Montana and Idaho, down the river to the ocean—is the glorious Pacific Northwest.

The 26-minute film, created by award-winning Echo Film Productions, is available on loan, free, in 16mm, ¾-inch video, ½-inch BETA, and VHS. For additional information about "Journey of the Kings," contact the Northwest Power Planning Council, Capitol Station; Helena, MT 59620 (406/444-3952).

MONTANA OUTDOORS INDEX

The major items published in *Montana Outdoors* in 1984 are indexed below. Extra copies of all '84 issues are available at $1.50 each, plus 25 cents for postage. Some earlier back issues are available at the same price.

To inquire about or order a back issue, write: Back Issues, *Montana Outdoors,* Department of Fish, Wildlife and Parks; Helena, MT 59620.

BOOKS REVIEWED

Strayed Shots and Frayed Lines—edited byJohn E. Howard (May/June).

The Duck Hunter's Book—edited by Lamar Underwood (May/June).

Fishing Yellowstone Waters—by Charles E. Brooks and J. Daniel Callaghan (July/August).

More Stories of the Old Duck Hunters—by Gordon MacQuarrie (Sept./Oct.).

The L.L. Bean Game & Fish Cookbook—by Angus Cameron and Judith Jones (Nov./Dec.).

Waterfowl Heritage—North Carolina Decoys and Gunning Lore—by William Neal Conoley, Jr. (Nov./Dec.).

DEPARTMENT LANDS/PARKS

Intake Fishing Access Site—At Intake, the rare and unusual paddlefish can be caught with a success that would astound most fishermen (David G. Conklin, May/June).

Blackleaf Wildlife Management Area—A wild, unique piece of Montana that offers diverse habitat for many wildlife species (Gary Olson, Sept./Oct.).

FISH/FISHING/WATER

Rainbows on the Rebound?—Recent changes in rainbow trout management at Canyon Ferry Reservoir should provide excellent rainbow trout fishing by 1985 (Bruce Rehwinkel and Jerry Wells, March/April).

The Fish with the Glassy Eye—If heaven were a good walleye spot, about 1,001 Montana anglers would die to get there (Ken Walcheck, March/April).

Color Them Blue—The term "blue ribbon trout stream" was coined a quarter-century ago this year (George Holton, May/June).

Fish Problems in Glacier—Park officials are becoming concerned that some of Glacier's fish need more attention (Madonna Luers King, May/June).

1983 Fishing Records Summary—Three records were broken (May/June).

Hooking Onto Special Regs—Special regs can result in dramatic increases in the numbers of large trout (Steve L. McMullin, May/June).

Tapeworms in Cloverleaf Lakes Cutthroat—Worms in fish are unsightly, but they usually don't affect the quality of the flesh (Jim Peterson, May/June).

Flathead's Favorite Fish—Biologists have faced some difficult questions in trying to understand the kokanee, but there is no denying its importance to the Flathead (Janet Decker-Hess, July/August).

The Ups and Downs of Fort Peck Reservoir—From a fisheries standpoint, Montana's largest single body of water has had its ups and downs. With a sidebar about Walleyes Unlimited of Montana (Jim Liebelt, July/August).

Please Fill in the Blanks—Fisheries managers learn a great deal from answers to fishing questionnaires. The Catchall (Bob McFarland, July/August).

Trout Heaven—Between Holter Dam and the Smith River, the Missouri is "heaven on water" for trout fishermen (Rod Berg, Sept./Oct.).

GAME/HUNTING

Big Sky Hoedown—In celebration of another season of growth and renewal, Montana's prairie grouse begin their ancient courtship rites (Dave Books, March/April).

Montana's Million-Dollar Black Bears—Over the last 25 years, the status of the black bear has changed—from that of a pest to that of a valued game animal (Mike Aderhold, March/April).

Know Your Bears—How to distinguish between black and grizzly bears (Mike Aderhold, March/April).

More Than Firearms Safety—Montana's Hunter Education Program. The Catchall (Chris Eby, March/April).

More Nuggets Panned from Boone and Crockett—Hunters continue to take Boone and Crockett trophies at a record pace, especially in Montana. The Catchall (Norman C. Roettger Jr., March/April).

Ear Protection: A Must for Shooters—The Catchall (Larry Wundrow, July/August).

Montana Muleys—Montana's mule deer typify the state's rich wildlife heritage (Heidi Bailey Youmans, Sept./Oct.).

Asking Questions and Finding Answers—Conducting game harvest surveys would be impossible without asking many questions (John Cada, Sept./Oct.).

The Mourning Dove: Montana's Newest Game Bird—Montana hunters will find the challenge of these twisting, diving speedsters irresistible (Dave Books, Sept./Oct.).

Unusual Disease Claims Bighorns—The Catchall (Harley Yeager, Sept./Oct).

Hunter Safety: Serious Business—Hunter education results in fewer hunting accidents (Chris Eby, Sept./Oct.).

Identification of Montana's Big Game Mammals—Full-color paintings and text describe 11 species (compiled by Bart O'Gara, paintings by Robert Neaves, Nov./Dec.).

Where Have All the Mallards Gone?—The philosophy of "over the hill" is explored (Tom Hinz, Nov./Dec.).

Deer Hunting: The Way We Were—A guest editorial. Perspectives. (John Barsness, Nov./Dec.).

Hunting on Private Land: A Privilege—The Catchall (Gene Allen, Nov./Dec.).

GENERAL

Special Photo Issue—(Jan./Feb.).

More Folks Behind the Badge—Profiles of seven wardens entrusted with protecting Montana's wildlife (Mike Aderhold, March/April).

Sentinel—A man and his dog sense the ghosts of a sheepherder and his dogs (Mike Logan, March/April).

Some Classrooms Don't Have Walls—Project WILD. The Catchall (Spencer Sartorius, March/April).

Look, But Don't Touch—If you see a young animal alone—leave it that way; its mother is probably nearby (Vince Yannone, May/June).

Approaching the Mountain—Granite Peak, the "King," is more than just a name on a map (Greg Noose, May/June).

Montana Sting—The investigation, which originated in Montana, broke up one of the largest wildlife poaching rings on record (Bill McKiernan, May/June).

Scratch, Bark...And You Get a Fly—A cat, a dog, and a fly-fishing novice are part of a fishy experience—from which the sport may never recover (Tom Ellerhoff, July/August).

Trapshooting in Montana: A Grand Old Tradition—Although it rarely makes sports page headlines, trapshooting is still alive, well, and even thriving in Montana (Dave Books, July/August).

The Rocks with the Pretty Pictures—Rock hounds who search along the Yellowstone River are often rewarded with agates in which they find "pictures" of trees, lakes, hills, flowers, animals, or even people (Pat Gudmundson, July/August).

"Collecting Butterflies in Montana"—Marvel at the lengths to which nature will go in embellishing her creatures (Morton J. Elrod, introduction by Larry S. Thompson, July/August).

Montana Remembered—Memories of a Montana summer, filled with fishing and camaraderie (Jon Wongrey, Sept./Oct.).

Nine Million Years and Still Flying High—The sandhill crane's resonant call undoubtedly echoed through Montana's prehistoric marshes (Tom Butts, Sept./Oct.).

Elk Poker—Mother Nature, Father Time, Lady Luck, and Mr. Bull Elk are part of a high-"steaks" game (Bob Jensen, Sept./Oct.).

My Den—A man's den is his castle. Or maybe his castle is his den (Mike Logan, Nov./Dec.).

A Christmas Legacy—Words for a son to read now, and for many years to come (Tom Butts, Nov./Dec.).

Who Are Montana's Snowmobilers?—They are among those who enjoy Montana's winter (Gretchen Olheiser, Nov./Dec.).

HABITAT/ENVIRONMENT

Return of a Ritual—What happens when a traditional sharptail dancing ground is disturbed or destroyed? (Bruce Waage, March/April).

Don't Cuss the Brush—Your fishing success depends on it (William S. Platts and Martin Onishuk, May/June).

Small Hydro: Old Idea, New Problems—Small-scale hydropower projects can have a significant environmental impact (Al Elser, July/August).

Montana's Noxious Weeds: A Growing Problem—Across the state, at least 4.6 million acres are covered with them (Mike Aderhold, Nov./Dec.).

NONGAME WILDLIFE

Make a Check That Can Make a Difference—The nongame tax checkoff. The Catchall (March/April).

Montana: Crucial Key to Ferret Recovery—Wyoming harbors the only known population of black-footed ferrets; however, Montana's potential as a ferret site is excellent (Dennis L. Flath and Tim W. Clark, May/June).

Montana's Most Colorful Songbird—The western tanager (Vince Yannone, Nov./Dec.).

Identification of Montana's Big Game Mammals

compiled by Bart O'Gara
paintings by Robert Neaves

The following is a guide to help you identify the big game mammals of Montana and their tracks, and in some cases to determine the sex or age of an individual animal. Hunters (and others) sometimes have trouble differentiating between male and female mountain goats, yearling male and female mountain sheep, grizzly and black bears, and occasionally even moose and elk. It is hoped that this guide will be of value to all serious students of Montana's big game species.

Information on the ecology and habitat of each species is condensed from publications, suggestions from field biologists, and personal experience. The range maps are based on those from "Game Management in Montana" (Montana Fish and Game Department; Helena Mont., 1971). These maps are only approximations because large mammals travel extensively, especially in response to droughts or severe winters, and ranges are constantly increasing or decreasing. Also, occasional animals, especially young males, are sometimes found far outside the normal range of a species. The common and scientific names are taken from the "Revised Checklist of North American Mammals North of Mexico" (Jones et al., Texas Tech University, 1982).

The big game mammals of Montana fall within one of two orders: Artiodactyla (cloven-hoofed "cud chewers," which are ruminants with large, four-chambered stomachs) and Carnivora (meat eaters with sharp, curved canine teeth used for killing prey).

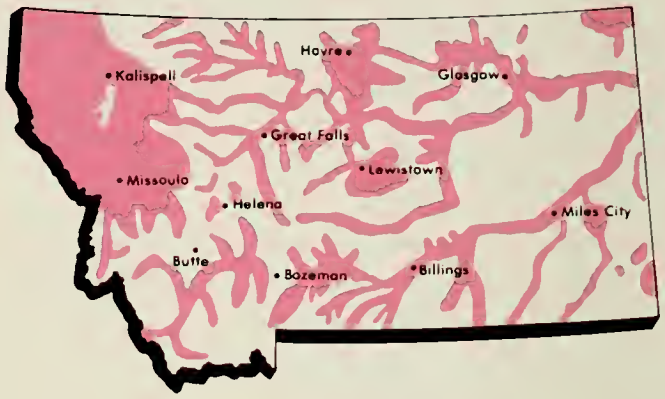
Artiodactyls are specialized for fast, easy travel so they can escape predators or make seasonal migrations. They may be browsers (living mostly on shrubs), grazers (using herbs and grasses), or both. This order is generally divided into five or six families (depending on the taxonomic authority), but only two (or three) are found in Montana: the Cervidae (deer family) and the Bovidae (cow-sheep-goat-antelope family). Some authorities place the pronghorn in a separate family (Antilocapridae). Only the males of Montana Cervidae carry antlers except for the caribou, and the antlers are shed every year. Montana Bovidae have permanent horns (except for pronghorns, which shed their horn sheaths annually), and the horns are usually carried by both sexes.

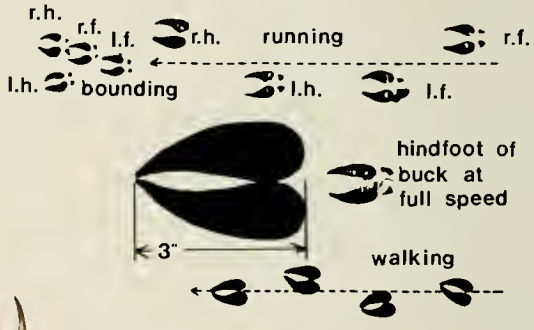
Carnivora includes mammals that are true carnivores, and also some that have diverged considerably and are omnivorous (generalized feeders). The two Montana families, Felidae (cats) and Ursidae (bears), represent the two extremes of this situation. The Felidae are highly specialized, with short, broad skulls, short jaws, and teeth adapted for shearing meat and tendons. Cats are fast runners for short distances and their feet are raised somewhat from the ground so that they run on the surfaces of their toes, rather than on the tips, as Artiodactyls do.

Members of the Ursidae have nearly flat-topped molars, much like those of humans, which are adapted more for chewing vegetation than meat. The bears have flat feet with all five toes touching the ground. Montana bears spend the cold months in "winter sleep" (not deep hibernation), in which the body temperature and metabolic rate drop only slightly below normal. The females undergo "delayed implantation" after breeding in June or July. The fertilized egg passes into the uterus, where it changes very little until late fall when it implants and begins to grow rapidly.

WHITE-TAILED DEER
(Odocoileus virginianus)

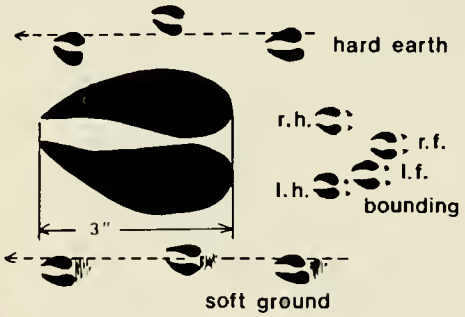
OTHER NAMES: Whitetail, Virginia deer. **CHARACTERISTICS:** Coat grayish-brown in winter, reddish-brown in summer; underside of foot-long tail white; antlers consist of main beams, generally with three to five tines projecting upward; brow tines long; outside of lower hind foot has a small, teardrop-shaped scent gland; mature bucks weigh 250-275 lbs. on good range, does 160-180. **HABITAT:** River and creek bottoms; dense vegetation at higher elevations; sometimes open bitterbrush hillsides in winter. **FOOD:** Leaves, twigs, fruits, and berries of browse plants such as chokecherry, serviceberry, snowberry, and dogwood; some forbs during summer. **BEHAVIOR:** Occupy small home ranges, do not migrate far; mostly nocturnal and secretive; solitary much of the time but form small groups in favored feeding areas; when alarmed or running, erect and wag their tails, causing white underside to flash. **REPRODUCTION:** Breed mid-to late November; one or two reddish but white-spotted fawns; bucks do not gather harems; necks of rutting bucks swell (but less so than mule deer); healthy adult bucks shed antlers in December or January; does usually breed first as yearlings in Montana (16-17 months). **STATUS:** Numerous in suitable habitat; secretive habits allow them to live near people and use agricultural crops.





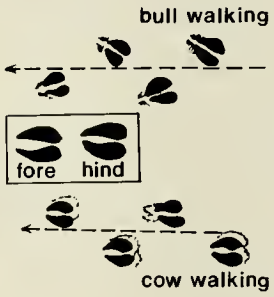
MULE DEER
(Odocoileus hemionus)

OTHER NAMES: Blacktail, black-tailed deer (fairly common but confusing because two smaller subspecies of mule deer along the West Coast are called blacktails). **CHARACTERISTICS:** Coat gray in winter, brownish in summer; forehead and brisket dark; chin, throat, and rump patch white; tail short and round with black tip; ears large (reason for name); antlers fork and fork again; typical adult buck has four tines on each side (or five if brow tines are present); forward-tipping brow tines are shorter than those of whitetails or may be absent; outside of hind foot has slit-like scent gland up to 7 inches long; mature bucks weigh 250-275 lbs. on good range, does 160-180. **HABITAT:** Grasslands interspersed with brushy coulees or breaks; riparian habitat along prairie rivers; open to dense montane and subalpine coniferous forests, aspen groves. **FOOD:** Bitterbrush, mountain mahogany, chokecherry, serviceberry, grasses, and forbs. **BEHAVIOR:** More gregarious and migratory (mostly elevational movements) than white-tailed deer; feed early and late in the day; run with tail down in bounding leaps, keeping all four feet together. **REPRODUCTION:** Breed in late November; one or two greyish but white-spotted fawns; bucks gather harems; necks of rutting bucks swell; healthy adult bucks shed antlers in December and January; does usually breed first as yearlings (16-17 months). **STATUS:** Numerous in suitable habitat throughout Montana.



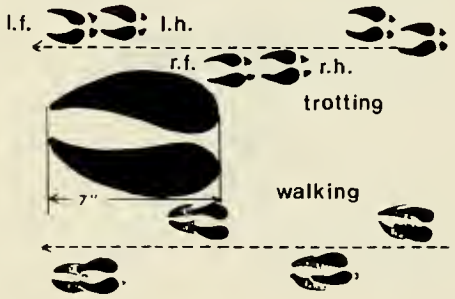
ELK
(Cervus elaphus)

OTHER NAMES: Wapiti, Yellowstone elk, Rocky Mountain elk. **CHARACTERISTICS:** Coat brown (pale yellowish in old bulls); head, neck, and legs darker than rest of body; distinctive rump patch yellowish to almost orange; mane or ruff longer in bulls than in cows; antlers of mature bulls generally have five tines projecting from the main branch for a total of six points; bulls can weigh more than 1,000 lbs. before the rut but seldom exceed 900 lbs. during hunting season; cows weigh 500-600 lbs. **HABITAT:** Mainly coniferous forests interspersed with natural or man-made openings (mountain meadows, grasslands, burns, and logged areas). **FOOD:** Grasses, sedges, forbs, deciduous shrubs (especially willow and serviceberry) and young trees (especially chokecherry and maple), some conifers. **BEHAVIOR:** Strong herding instinct; old cows usually lead summer herds of cows, calves, and yearling (spike) bulls; in western Montana, elk usually summer at higher elevations and move down to grass and/or shrub winter ranges (with nearby trees for thermal cover); habitat use strongly influenced by human activities. **REPRODUCTION:** Breed in late September and early October; one spotted calf; shed antlers during March or April; bulls gather and hold harems, challenge one another by bugling; cows usually breed when 2½ years old. **STATUS:** Populations stable in most of western Montana and limited areas of eastern Montana.



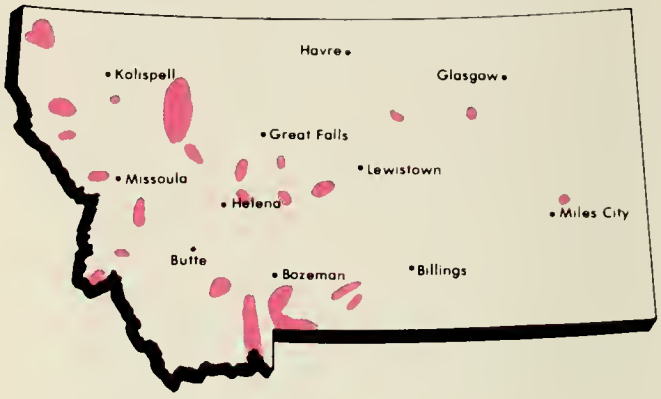
MOOSE
(Alces alces)

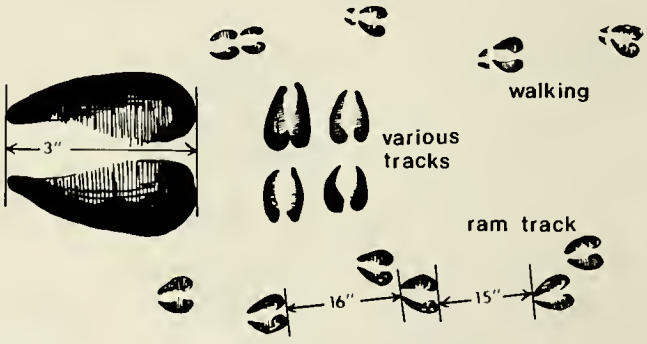
OTHER NAMES: Called elk in Europe, Shiras moose. **CHARACTERISTICS:** Coat dark brown to black; large, overhanging snout; pendant "bell" under throat; antlers massive and flat; tail short; bulls (largest antlered animals in the world) weigh 800-1,200 lbs., cows 600-800. **HABITAT:** Variable; in summer, mountain meadows, river valleys, swampy areas, clear cuts; in winter, willow flats or mature coniferous forests; best ability of any Montana ungulate to negotiate deep snow. **FOOD:** Browse, including large saplings; aquatic vegetation. **BEHAVIOR:** Usually solitary but may congregate during rut or on excellent winter range; at home in water, may submerge for 3-4 minutes, or swim for miles; cows very protective of calves. **REPRODUCTION:** Breed in late September and early October; shed antlers in December or January; one or two russet-brown young without spots; where moose are scarce, both sexes travel extensively looking for mates; in other areas, both sexes form breeding groups; bulls fight for cows; females usually breed when 2½ years old, but may breed as yearlings on good range. **STATUS:** Hunting was prohibited throughout Montana in 1897 and remained closed for 50 years; populations recovered and are now stable in most suitable habitat.



BIGHORN SHEEP
(Ovis canadensis)

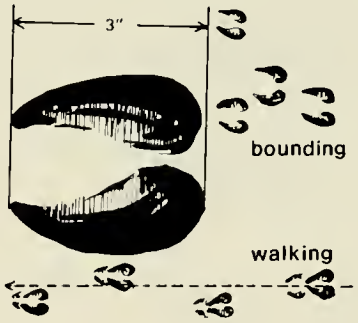
OTHER NAMES: Rocky Mountain sheep, Rocky Mountain bighorn, bighorn. **CHARACTERISTICS:** Coat grayish-brown with yellowish-white underparts; creamy-white rump patch around small brown tail; horns of adult rams massive and curled, up to 45 inches long; horns of adult ewes thin, slightly curved, 6-13 inches long; horns of yearling rams wider at the base with more divergent tips than those of ewes, and 7.5-17 inches long; old rams may exceed 300 lbs., ewes seldom exceed 150. **HABITAT:** Cliffs, mountain slopes, rolling foothills; sometimes cross intermountain valleys. **FOOD:** Bunchgrasses and shrubs on winter range; wide variety of grasses, sedges, and forbs on summer range. **BEHAVIOR:** Most sociable of Montana's big game species; herds segregate according to age and sex; ewes, lambs, and yearling males band together; adult males band in herds spanning 2- or 3-year classes; subject to die-offs related to severe winter weather and pneumonia. **REPRODUCTION:** Breed in November; usually one young; rams battle for dominance by crashing horns together; ewes usually breed at 2½ years of age, but may breed as yearlings. **STATUS:** Populations declined as West was settled due to hunting, disease, and perhaps competition with domestic sheep; bighorns were reintroduced to historic ranges.





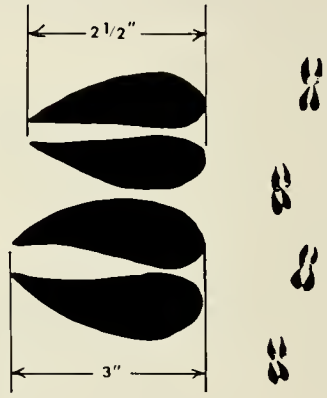
MOUNTAIN GOAT
(Oreamnos americanus)

OTHER NAMES: Rocky Mountain goat. **CHARACTERISTICS:** Coat white; horns and hooves black; tail may have a few black or brown hairs; long hair of winter coat forms a beard under the chin and pantaloons around the front legs; body compact and chunky, legs short; horns smooth, sharp, and curve slightly backward, 8-10 inches long; horns of nannies curve less and are thinner, but sometimes longer, than those of billies; hooves have hard outer edges with soft centers that "stick" to rocks; old billies may weigh 300 lbs. or more, nannies about 150. **HABITAT:** Precipitous terrain; steep, south-facing slopes in winter, sometimes enter subalpine forest. **FOOD:** Grasses, sedges, lichens, forbs, and shrubs. **BEHAVIOR:** Nannies, kids, and immature billies form small herds; mature billies often alone except during rut; females dominant over males. **REPRODUCTION:** Breed in November and December; usually one kid, but sometimes two on good range; billies fight head to tail, sometimes inflicting serious wounds to hindquarters and flanks; nannies usually breed at 2½ years of age. **STATUS:** Occurred historically in major mountain ranges of western Montana, but transplanted to suitable habitat in isolated ranges throughout the state; eliminated in some drainages where roads or good trails approach wintering cliffs.



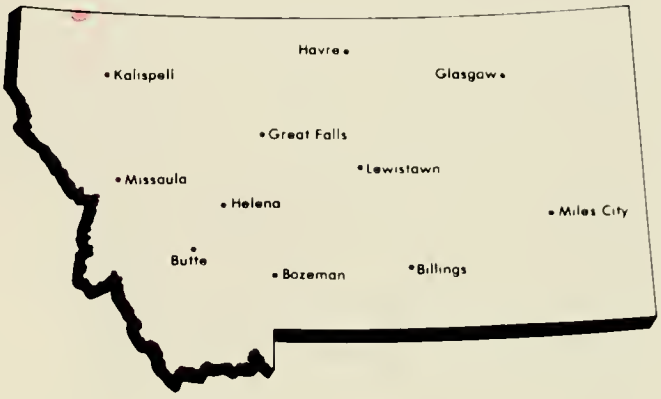
PRONGHORN
(Antilocapra americana)

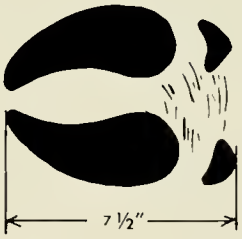
OTHER NAMES: Antelope. pronghorn antelope. **CHARACTERISTICS:** Coat rich russet-tan with white underside; large white rump patch; two white bands across throat; black markings on head; eyes large, dark; dew claws absent; horns of adult bucks 13-16 inches long with prongs and curved tips; horn sheaths shed annually; about 70% of adult does have horns (averaging 1½ inches long); adult bucks weigh 125 lbs., does 110. **HABITAT:** Open, rolling sagebrush/grasslands. **FOOD:** Forbs in spring and summer; browse, especially sagebrush, in winter; small amounts of young grasses in spring and after fall rains. **BEHAVIOR:** Adult bucks territorial from March through September; does and fawns in small herds drift on and off bucks' territories in spring and summer; herds of bachelor bucks excluded from territories; all ages and both sexes congregate in winter herds; during severe winters, herds drift for long distances seeking food; barriers to such movements limit populations; excited animals emit explosive snorts, erect white rump patches, and emit musky odor from glands in rump patches. **REPRODUCTION:** Breed in late September; two grayish-brown fawns; bucks fight viciously and sometimes fatally; territorial bucks hold harems to breed; bucks shed horn sheaths in November; females usually breed when 1½ years old, but may breed as fawns. **STATUS:** North American population reduced to about 25,000 by 1925; current population more than one-half million due to transplants and management; now common in most suitable habitat.

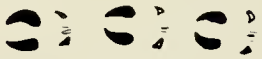


CARIBOU
(Rangifer tarandus)

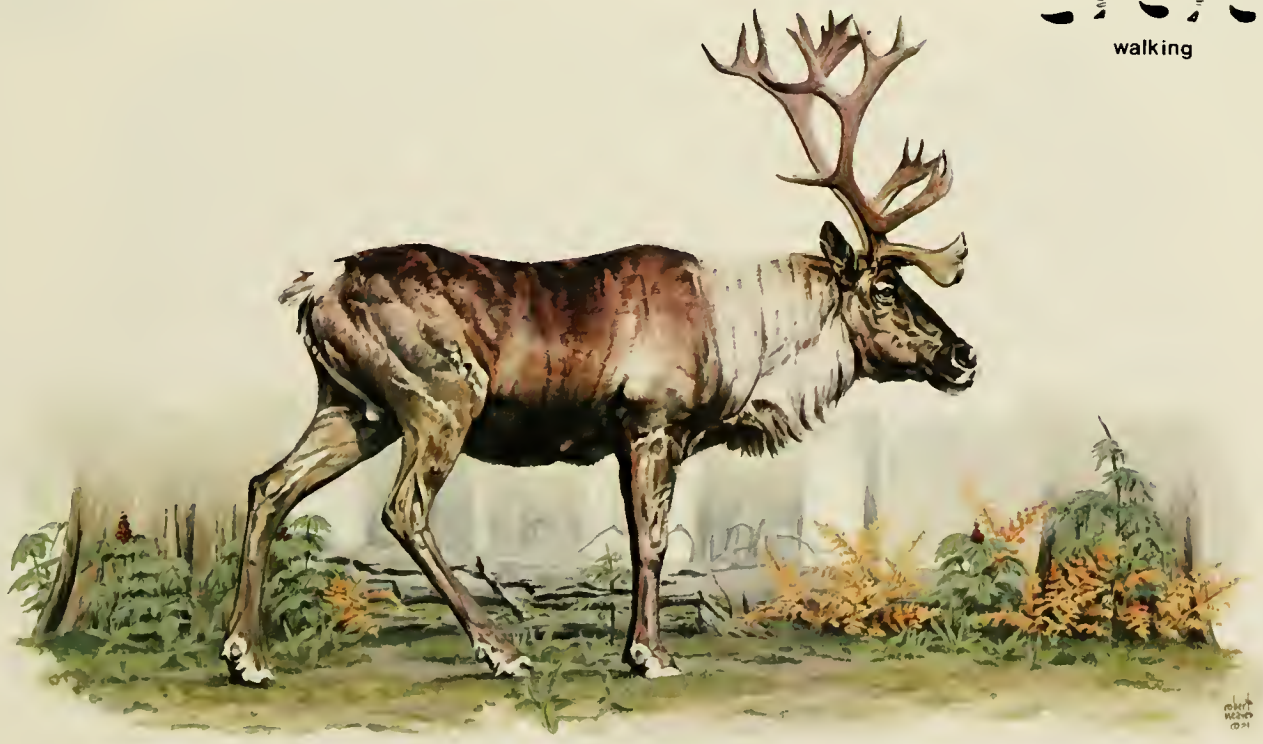
OTHER NAMES: Reindeer (European), mountain caribou, barren ground caribou. **CHARACTERISTICS:** Coat dark brown (bleached grayish-brown in summer), with grayish-white belly, rump, and underside of tail; light band just above hooves; muzzle wide; ears short; hooves broad and rounded; bulls have thick, white neck mane, most evident in autumn; bulls and cows both carry antlers; those of males somewhat flattened, usually with palmated brow "shovels"; main beams extend back, up, and out to the sides, then forward with points and sometimes palmation at ends; antlers of females small and round with only one or two branches; mature bulls weigh 350-500 lbs., cows 250-300. **HABITAT:** Mature forests, cedar/hemlock in early winter and spring, subalpine whitebark pine in summer, spruce/fir at intermediate elevations other times. **FOOD:** Lichens, sedges, young grasses and forbs, willows, softer tissues of woody plants. **BEHAVIOR:** Wander in small bands; hooves spread when weight is put on them and click together when picked up. **REPRODUCTION:** Breed in late September and early October; one precocious, unspotted calf; calves usually born within a few days of each other to all cows in a herd; adult bulls shed antlers in December; cows shed after spring calving. **STATUS:** Probably never numerous in Montana, but fires, logging, and other removal of old-growth forest have reduced habitat. Not hunted in Montana.





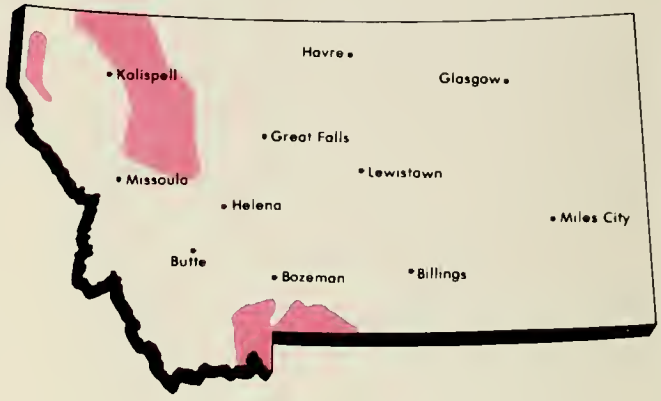


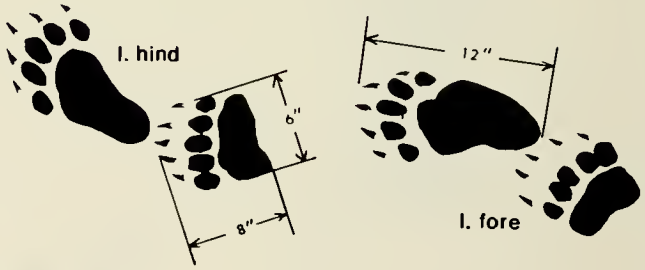
walking



GRIZZLY BEAR
(Ursus arctos)

OTHER NAMES: Brown bear, grizzly, silvertip. **CHARACTERISTICS:** Coat brownish (but sometimes blond to almost black) with silver-tipped guard hairs; noticeable hump between shoulders; face looks slightly "dished-in"; claws on front feet long (up to 4 inches) and nearly white; tracks show claw marks farther ahead of toes than those of black bears; males weigh 300-400 lbs., occasionally up to 650; females average 200-300. **HABITAT:** Coniferous forest mixed with open areas; alpine meadows; avalanche chutes; originally found on prairies along streams. **FOOD:** Grasses, roots, bulbs, berries, insects, carrion, fish, rodents, occasional ungulates (wild or domestic), and (where available) garbage. **BEHAVIOR:** Most active during early morning and late evening; gather and share concentrated food sources; dig dens into steep slopes at high elevation where snow accumulates and where roots support roof; adults climb trees with difficulty due to long, nearly straight claws. **REPRODUCTION:** Breed in June and July; one to four young (two most common) born naked and blind, develop in den before emerging in spring; young usually remain with female until age 2; females first breed at 4-6 years of age, and breed in alternate years or every third year thereafter. **STATUS:** Main Montana populations in Yellowstone and Glacier National parks and surrounding areas; not compatible with dense human populations.



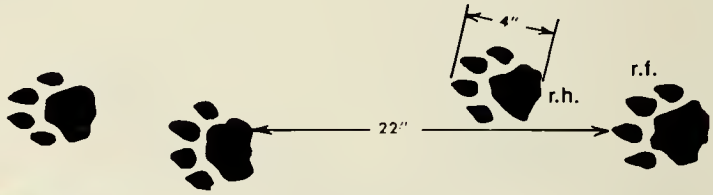


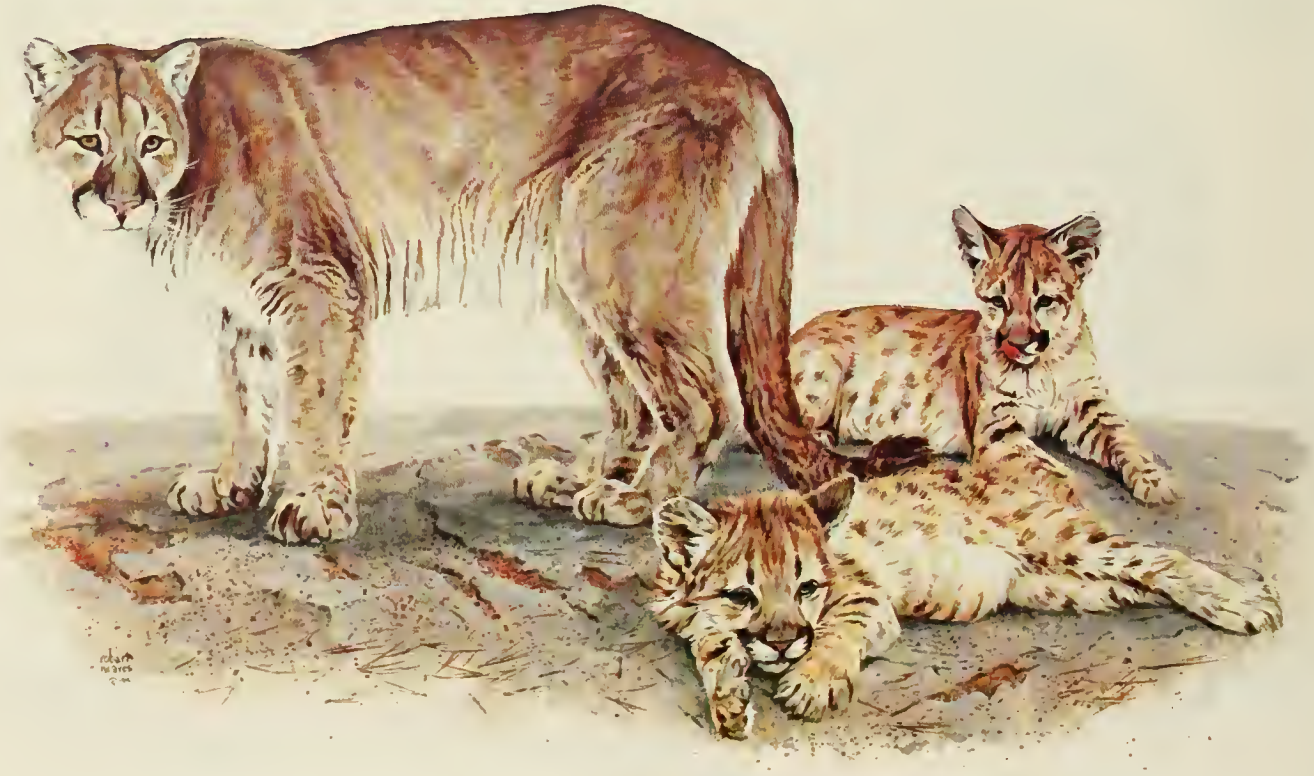
BLACK BEAR
(Ursus americanus)

OTHER NAMES: American black bear, cinnamon bear, baribal. **CHARACTERISTICS:** Coat black (often with white on chest), brown, or blond; slight shoulder hump, but highest point of body above hips; muzzle straight and long in profile; claws of front feet dark, strongly curved, and shorter (seldom more that 1½ inches) than those of grizzly; males weigh 180-250 lbs., occasionally up to 400; females weigh 120-180. **HABITAT:** Dense forests; riparian areas; open slopes or avalanche chutes during spring green-up. **FOOD:** Grasses, sedges, berries, fruits, inner bark of trees, insects, honey, eggs, carrion, rodents, occasional ungulates (especially young and domestic), and (where available) garbage. **BEHAVIOR:** Largely nocturnal; usually solitary; dig less elaborate dens than grizzlies, often in natural cavities (trees, rocks), under logs, brush piles, or even buildings; climb trees easily. **REPRODUCTION:** Similar to grizzlies, except females often first breed at 2½ or 3½ years of age; in very poor habitat, may not breed until 6½. **STATUS:** Good numbers in mountainous areas; generally avoid clear cuts until regrowth of brush and conifers takes place.

MOUNTAIN LION
(Felis concolor)

OTHER NAMES: Puma, cougar, panther, catamount. **CHARACTERISTICS:** Coat gray to yellowish- or reddish-brown; colors usually deepest along back, with whitish shades on underside; head small and rounded with very short face; eyes set forward on head for sight hunting; ears short and rounded; body long and lithe; tail long, round, black-tipped; adult males weigh 150-190 lbs., females 70-120. **HABITAT:** Mostly mountains and foothills, but any habitat with sufficient food, cover and room to avoid humans. **FOOD:** Deer, elk, and porcupines most important in Montana, but take prey ranging in size from grasshoppers to moose. **BEHAVIOR:** Solitary, except for females accompanied by males or kittens; females den in caves, rock crevices, brush piles, etc. with kittens and leave them there while hunting; usually hunt by stealth at night and cover unused food for later use; males territorial, and large male home ranges may overlap smaller ones of females. **REPRODUCTION:** Breed any time, but young most commonly born in May; two to four spotted young born about every 2 years per female; females keep males away from kittens, which may otherwise eat them; females first breed at 2-4 years of age. **STATUS:** Common in mountains and foothills; occasional in much of eastern Montana.





READERS RESPOND

Lots of Powder and Shot

The article, "Trapshooting in Montana: A Grand Old Tradition," by Dave Books in your July/August 1984 issue covered the topic very well and showed that Dave had done a lot of homework.

It was particularly interesting to me, since my father, Ben Wahle Sr., was a charter and life member of the Helena Gun Club. He was issued Life Member Card #10. As sporting goods manager for Holter Hardware for 30 years, he had a wealth of friends in the western trapshooting community. As a kid, I used to set and pull traps (no automatics in those days) at the state shoot. I have a picture of Dad as a member of the Helena team which included Ren Prosser, Vince Gruner, and Otto Huntenberg, who was the pastry cook for the old Weiss Cafe and who made the best apple pie in the state of Montana.

I met Ted Renfro many times as Dad used to go duck hunting at his ranch in Dell, Mont. Al Mues and Zip Eaton were two of the best, as was John Delano, a fraternity brother of mine at the University of Montana. Another man who did a lot for the sport in Montana was Cliff Stump, a professional who worked for Western Ammunition.

As an old game warden (Roundup—1941), I enjoy reading your magazine because hunting and fishing are still #1 in my life.—*Ben Wahle Jr.; Burlingame, Calif.*

* * * * *

The article by Dave Books on trapshooting in the July/August issue interested me because E.W. Renfro is my great-great uncle. Would you send me four copies of that issue, please? One will go to the brother of E.W., Charley Austin Renfro. Charley is my grandfather, and on July 3, 1984, he was 93 years young.

My father is Charles Renfro, whose father is Charley Renfro. We really enjoyed reading the article. Grandpa Charley would tell me about E.W. taking eggs and selling them to buy shotgun shells, while Charley did all the work.

E.W. also worked for the Peters Shell Co. He did demonstrations for them at shoots all over the country. By the way, the family name for E.W. was Ted.—*Dale L. Renfro; Onaga, Kansas*

* * * * *

The lead article on trapshooting in your July/August 1984 issue was read with interest. By way of supplement, readers might appreciate a note on the guns used by Helena's Rod and Gun Club Team of 1888. It is apparent from the old photo in Dave Books' account that these western enthusiasts a hundred years ago had the best quality arms available.

Both Cooper's and Ballier's guns are clearly those manufactured by Parker Brothers of Meriden, Conn. They are hammer doubles, contemporary of the period, containing modifications introduced in the 1880s. Hammerless Parkers appeared with an 1887 patent, but regular production did not start until 1889. Captain Fisk's gun is certainly an L.C. Smith, one of the first American hammerless doubles, introduced in 1886. His gun would have been made in Syracuse, N.Y., before Hunter Arms assumed management. Although this rotary-bolt model became popular immediately, only about a thousand were made before the factory moved to Fulton, N.Y. The picture does not show Manuel's gun so clearly, but it seems to be the same as Fisk's.

Cronin's, the fifth double, shows some diagnostic features, although the identification is less sure. It is a grade model hammerless box-lock, with Deeley & Edge fore-end lock. Only a few manufacturers were making guns of this nature during the 1880s. It is probably an English import. At this time, shotguns made by Greener and by Scott were intended for the American market. List price included a 35% *ad valorem* tax, so the field grade Greener cost $200, or about four times as much as that for a comparable gun made in this country.

The illustration on page four has Captain Bogardus with a repeating shotgun. His appears to be the Burgess pump, first made in 1892. Most of the professional shooters and many hunters adopted the multi-shot models as soon as they became available. Using assistants to reload the guns and throw targets, Doc Carver broke a thousand glass balls in only about 40 minutes. That's a lot of powder and shot!—*Bill Furnish; Atalissa, Iowa*

ABC a for a
Season of Superlatives
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Best Buy
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Montana Outdoors—the Merriest Christmas ever for you and yours

Important Lessons

Although a native of Michigan, transplanted to Texas, and now living in California, I look upon Montana as my home away from home. Through articles and pictures, *Montana Outdoors* keeps me in touch with my favorite place.

My love affair with Montana began some 25 years ago when, as a 12-year-old in Michigan, I was introduced to my cousin, Michael Gene McClatchy, a second lieutenant in the Air Force and a native of Helena. Hence, my introduction to the great state of Montana.

Gene is now a lawyer working for the state of Montana and a close friend of Bozeman Warden Captain Jim Ramsey. From boyhood to manhood, I've had the opportunity to experience, firsthand and with my cousin Gene, the proper way to view nature, sportsmanship, and most important, the relationship of man to his environment.

I sincerely hope you can find space in *MO* for this letter, to show proper recognition to a gentleman, outdoorsman, sportsman—a real friend to me and especially a friend to the state of Montana.—*Scott Sackett; San Francisco, Calif.*

Literature and Nature

We are new subscribers to your magazine and we enjoy it thoroughly.

The article in your July/August 1984 issue, "Collecting Butterflies in Montana," was lovely. The excerpts from Morton J. Elrod's book brought to mind the beautiful and thought-provoking essays of Aldo Leopold. Literature such as this enhances one's appreciation of nature.—*Joan Zelezny; Central City, Iowa*

Shared Mountain Memories

I've just read Jon Wongrey's "Montana Remembered" in the Sept./Oct. 1984 issue and wanted to say how much I liked it. As a newcomer to Florence, S.C., and a Montanan at heart, I'm having a hard time adjusting to life in the flatlands.

We have a thousand memories of time and space in the mountains. It's nice to know that there's someone who shares the memory of clear mountain streams, and sky, and wildness.—*Lauran Emerson; Florence, S.C.*

Who Are Montana's Snowmo

by Gretchen Olheiser

Nestled between tree-crowned peaks, the snowy meadow held a small circle of friends. The nearby trees, shaken by a gentle rush of wind, discarded their morning-new coats of snow in an uneven rhythm, as if reluctant to again stand bare.

Sounds of laughter and happy conversation drifted from the people gathered in the meadow and, swept away by the wind, dissipated in the crisp, cold air.

As they picnicked on sandwiches, cookies, and hot drinks, the group seemed oblivious to the fact that they were miles from civilization. Some lounged on their snowmobiles, while others, finished with their meal, took photographs of their friends and the breath-taking scenery. Hoods of some machines were raised as their riders tinkered, oiled, and poked at them, checking belts and comparing notes.

GRETCHEN OLHEISER

With no obvious signal, it was time to move on. Engines started, and the riders glided easily over dazzling snow, leaving the meadow behind. By day's end, they had traveled many miles, seen some magnificent country, and thoroughly enjoyed themselves in the invigorating fresh air of winter.

Who are Montana's snowmobilers? Why is their sport so important to them?

They represent a cross section of the state's population—doctors and mechanics; teachers and technicians; male, female; young, old; the racer, the dawdler; the lone wolf, the family—they're all out there enjoying Montana's winter.

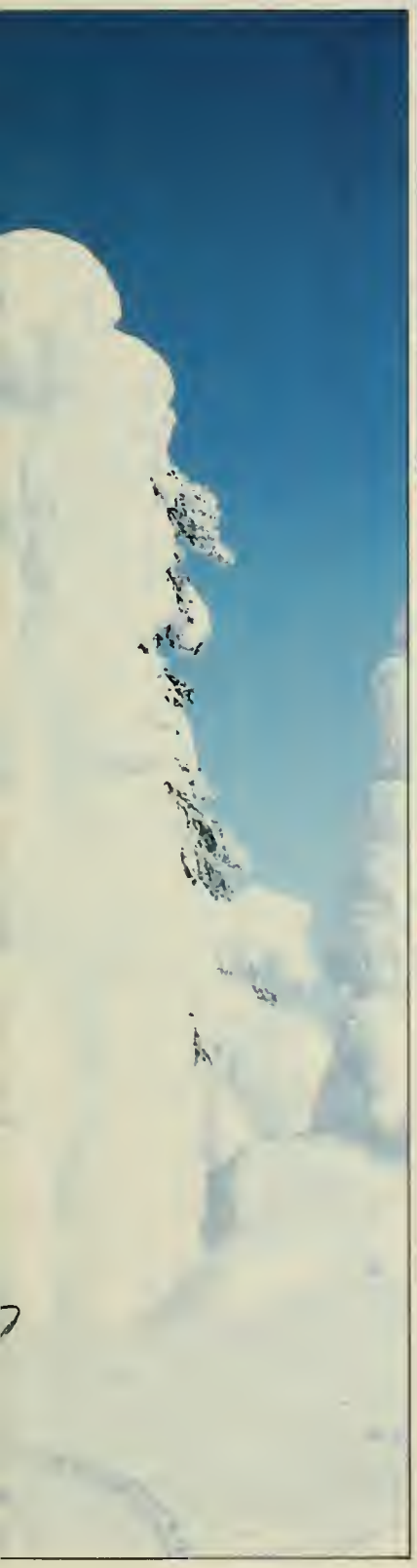
In 1972, they organized themselves as the Montana Snowmobile Association. Through that organization, they gathered information, traveled, met, and hammered out their successful 1977 and 1979 legislative proposals.

In 1977, two laws were passed creating today's state snowmobile program. The Department of Fish, Wildlife and Parks was designated the administering agency for the new program.

One law earmarked a $2 snowmobile registration decal fee for development, operation, and maintenance of snowmobile trail facilities and enforcement of the registration law. The second law set aside three-tenths of 1% of Montana's "distributors' gasoline tax" for similar activities and included provisions for promoting snowmobile safety. In 1979, this was amended to five-tenths of 1%, to more realistically reflect the amount of fuel used in snowmobiles. Ninety percent of the gas tax goes into development and maintenance of trail facilities; 10% is used for safety education.

NEAL MISHLER

ɔilers?



RON HOLLIDAY

RON AASHEIM

RON AASHEIM

Providing 1,600 miles of groomed trails at 20 locations, plus seeing that six parking lots at different areas are plowed, takes equipment and manpower. Although state-administered, Montana's Snowmobile Program is an exemplary cooperative effort. Snowmobilers work with department personnel in securing landowner permission for trails, determining grooming schedules, ascertaining budgetary and equipment needs, preparing trail maps, and clearing and marking trails.

Trail grooming is accomplished by snowmobilers, department personnel, and contractors. Snowmobilers also assist the program by reading snowmobile traffic counters and by maintaining the equipment leased to their clubs.

Although trail maintenance receives the largest portion of the snowmobilers' dollars, the safety, education, and enforcement programs are considered vital components.

The purpose of the safety program is to acquaint snowmobilers with the basic mechanical functions and safe operation of their machines. The courses, conducted by department personnel, stress good planning, systematic equipment maintenance, and traveling with a companion.

Respect for wildlife and the environment—as well as for other winter recreationists—is a basic tenet of the department's educational program.

Snowmobilers care about their sport; they care about the abundant natural resources that make snowmobiling in Montana the envy of less scenic areas; they care about other winter recreationists. It is typically snowmobilers who serve on search and rescue squads, donating their machines and their time in an effort to help others.

Snowmobilers are the same sportsmen the department has always served. They are the hunters, fisherman, and hikers of other seasons. Many believe Montana is at her best during winter, when the fair-weather crowds, pesky insects, and confining traffic are gone. Snowmobiling is more than a sport—it's a way of living, an aspect of life more thoroughly enjoyable because of the on-going snowmobile program. ■

NEAL MISHLER

BOOK REVIEWS

WATERFOWL HERITAGE—NORTH CAROLINA DECOYS AND GUNNING LORE, by William Neal Conoley Jr., Webfoot, Inc., Box 248; Wendell, NC 27591; 1982, 324 pages, $39.95, hard cover.

For the hunter and historian who would like to travel back into the early beginnings of our nation, "Waterfowl Heritage" offers this link to the past. Beautiful photographs throughout complement the text.

The Lost Colony, established in 1587 on Roanoke Island, and the hunting grounds of the famous "Blackbeard" are but a part of the interesting history of this unique area.

The protected rivers, sounds, and bays were home for myriad wildlife species. The many forms of wildlife provided food for a growing human population, carving a civilization that became the 13 colonies. Fishermen and market hunters made a livelihood by producing food, as seaports, farms, and towns began to change the wild landscape. The market hunters were joined by the more affluent sport hunters, and fabulous lodges and hunting clubs were developed.

The methods of hunting and the making of decoys as tools to attract wary waterfowl to the gunners make exciting reading. The art of decoy carving has been carried into modern times, and a portion of the book is devoted to contemporary artists.

Laws passed to protect waterfowl and shorebirds outlawed baiting, night hunting, and punt guns and ended commercial operations. An interesting chapter in hunting had passed, and a new era of conservation began.

Definitely not a decoy book for the beginner, "Waterfowl Heritage" is a must for the student of our rich hunting heritage in the United States.—*Roger Fliger, Region 5 (Billings) supervisor*

THE L.L. BEAN GAME & FISH COOKBOOK, by Angus Cameron and Judith Jones, Random House Publishers, Inc.; New York, NY 10022; 1983, 475 pages, $19.95, hard cover.

With one dad, three brothers, and one husband who hunt big game, my freezer always has more game in it than I know what to do with. Add to that a boss who loves to fish and hunt birds and who then willingly trades some of his bounty for my elk steaks. If anybody needs an excellent game and fish cookbook, *I* do.

I think I found it. "The L.L. Bean Game & Fish Cookbook" is a big, lusty, comprehensive cookbook that embraces an extraordinary range of dishes—almost 500 recipes—for every species the North American hunter and angler are likely to bring home. To tempt your palate, consider these: Fillet of Black Bass with Asparagus and Cream Sauce; Braised Duck in Creole Sauce; Chicken-Fried Kit Beaver; Squirrel Stew with Black Olives; Deviled Ribs of Elk, Caribou, or Moose; Antelope Marsala Parmesan; Salmon Sebago.

There are sections on sausages, pâtés, terrines, sauces, stuffings, and game accompaniments.

The cookbook also offers much more than recipes: field care of animals, basic camp cooking, game cooking under canvas, and—scattered throughout—wonderful tidbits to aid in the preparation of your wild fare. For example, the cook who comes by a Canada goose that weighs 6½ pounds dressed should know that the bird is mature, probably old and tough, and that it should be braised under a lid rather than roasted dry and uncovered.

The L.L. Bean Co. has a reputation for high quality in all manner of outdoor equipment. This reputation holds true for its cookbook. Tastefully illustrated, I highly recommend it.—*Donita Sexton, art director*

MIKE LOGAN

MY DEN

by Mike Logan

I came into my den just to make another stab at the duck hunting story. Mostly, "stab" is a pretty grandiose word for what I do.

I don't know if all would-be writers are like me, but once the urge strikes, I always find a multitude of other things needing my immediate attention. Usually, I doodle around with these until I see I'm not going to get any real writing done. All that out of my system, on the way out of the house, I grab my camera case and a fly rod or a shotgun, or both, depending on the season.

It's always seemed to me that if I'm not going to write, the trout stream or the duck blind is a better place not to write than a poorly ventilated den.

The den is what slowed my literary

undertaking for today.

My den....It always looks like a big yellow hook-jawed Kodak swam in and spawned with a giant red female shotgun shell. They both beached themselves on my roll-top desk and died—leaving multihued progeny strewn in all directions. I fought the word "den" for a long time. Always seemed a good deal pompous, 'til the Dutchman solved the problem for me.

When he came in, I was sorting the batch of slides we'd shot the week before in the duck blind.

Stumbling over a single leaky hip boot in the darkened room, he muttered under his breath. An audible groan escaped, as his other foot crunched into a pile of empty AA hulls mounded on the beautifully feathered carpet. I've never seen another rug like it. A summer's worth of marabou clippings—with furnace hackle, deer hair, and a generous mixture of peacock herl and many-colored thread—give it a certain flair. *I* think it's a work of art, but I'm not sure the opinion is unanimous around our house.

Anyway, the Dutchman finally fell into the relative safety of the other swivel chair. It was hard to convince him those #16 dry fly hooks weren't there as the final intricate touch on a trap set just for him.

"&&—****!&%%$ BOAR'S DEN!" he groused, sitting there in his long johns trying to get the tiny barbs out of the seat of his heavy wool hunting britches.

I reminded him that he was lucky just to be picking them out of his pants. I also urged him to hurry up and shut off the lights so I could get on with sorting the pictures.

I've been able to get along with the word "den" ever since. Nobody else knows why, but that doesn't matter.

The thing that bothers me is I know that other hip boot's in here somewhere.

Of course, there could be an elephant in here too. But if he doesn't sneeze from all that marabou up his nose and give himself away, I probably won't run across him 'til spring.

If then. ■

A Christmas Legacy

continued from page 3

past this cliff? How do I climb over these rocks? As each problem came, one at a time, I carefully and methodically solved it. I ate lunch on the summit of that mountain, as I looked over a vast expanse of the Rocky Mountains. And I felt I had learned an important lesson in life.

The outdoors has a great deal to offer, son, and I hope you are able to experience much of it in your lifetime.

A wildlife biologist named Paul Errington, in a book titled "Of Men and Marshes," wrote about a trip he made in a canoe. He summed up a lot of what I have been trying to say to you. It is one of my favorite quotes. I keep it posted in my office and refer to it now and then when I need a little direction. I would like to pass it on to you:

> *That memory is one of peace and of problems. The problems were not overwhelming, but there were the uncertainty and awareness of things still to be done. So it seems to be with man almost always, almost anywhere. Peace of mind exists, or can exist, but I do not know how much any of us can obtain any complete peace. It seems such a relative quality, whether that be due to me, to the nature of the human mind, or the nature of peace itself. Anyway, I can find some peace in thoughts of water seeking its own level, of buds unfolding, of fruits ripening, and of wild things staying wild; and I think that the outdoor values that have meant so much to my life are among those worth preserving in modern civilization and those that every well-intentioned person should have a right to share if he wishes.*

These are some of my thoughts for you for Christmas 1984. I hope this gift will be one that gains in value to you as the years go by. Merry Christmas, son!

Love,
Dad

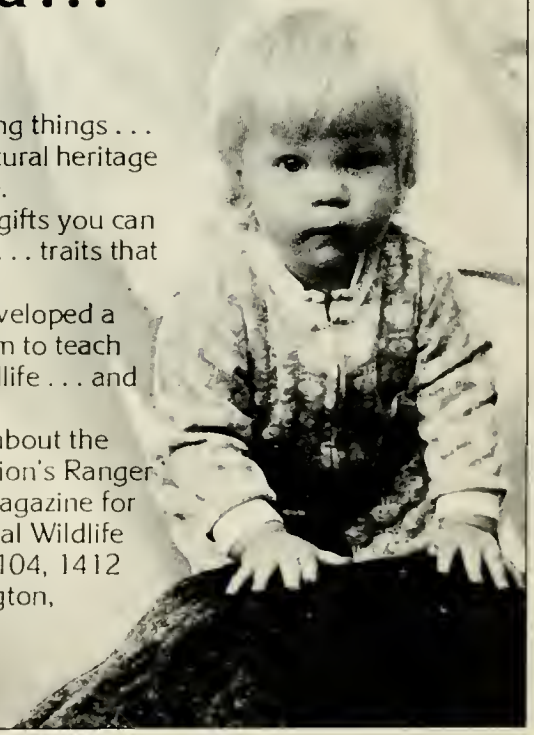
It starts when you're a child . . .

. . . a respect for all living things . . . an appreciation of our natural heritage of wilderness and wildlife.

And those are lifetime gifts you can pass on to **your** children . . . traits that make life a little richer.

We can help. We've developed a special children's program to teach them the facts about wildlife . . . and its value to mankind.

For more information about the National Wildlife Federation's Ranger Rick Nature Clubs and magazine for children, write the National Wildlife Federation, Department 104, 1412 16th Street, NW, Washington, DC 20036.



CONTRIBUTORS

• Christmas gifts are not always memorable. For example, think back to last year. Can you recall who gave you what? In this issue is "A Christmas Legacy" to a young man named Jeremy. It takes the form of a letter, from his father **Tom Butts**. It's the sort of gift Jeremy will never forget. It's one he can take out and read over and savor as he grows older. It provides some guidelines for living that will carry him into adulthood. It also contains a warm-hearted, personal, poignant message particularly appropriate at this holiday time of the year. Butts is a "when-I-have-the-time" writer, a summer-time gardener, an any-time fisherman, and a full-time biologist for the department; he lives in Roundup. His article leads off this issue, on page 2.

Diane Nugent's illustration was prepared especially for "A Christmas Legacy." Her rendition brings the article into beautiful four-color focus. She has done commercial art and fashion illustration, and currently works as a free-lance commercial artist in Butte. She has entered shows with her watercolors, pen and inks, and combination pressed flowers and watercolors. Her work is available through the Robin's Nest and Arts Chateau, Butte; Copper Village, Anaconda; and the Tatem House, Helena.

• It seems that duck hunting is the substance for a good many memorable days. There's something about the bouts with the cold air and the endless hours sitting in a soggy blind that bring the participants close together; maybe it's shared dawn, maybe it's shared misery. There's a question no doubt discussed in duck blinds, and elsewhere: "Where Have All the Mallards Gone?" **Tom Hinz** underscores one inescapable part of the picture when he reports declines in nesting success throughout the Central Flyway and in Canada's prairie provinces. In Montana, however, mallards have comparatively high nesting success, very likely making it "the largest producer of mallards in the United States." Turn to Hinz' article on page 4. He is a department biologist in Miles City and also chairs the Mallard Management Plan Subcommittee of the Central Flyway Waterfowl Technical Committee.

• A new *MO* section is inaugurated in this issue with a guest editorial by Missoula freelancer **John Barsness**. The section is called "Perspectives," and it will feature opinions, bits and pieces that don't fit elsewhere, and perhaps even some poetry and fiction. Barsness is a perfect choice to fill the first-time "Perspectives" space: This piece contains his opinion, but he also writes fiction and poetry and pieces that don't seem to fit anywhere else. Turn to page 8 for his views on "Deer Hunting: The Way We Were." Although this is the first time his words have appeared in *MO*, he is not a newcomer to magazine journalism; his work has appeared in *Sports Illustrated, Sports Afield, Outdoor Life, Gray's Sporting Journal, Field & Stream, Fins and Feathers,* and others.

Wildlife artist **Jim Trueax** provided the illustration for "Perspectives." He owns Artistic Creations in Helena, which specializes in signs, custom stained glass, and also contains an art gallery. Trueax, a native of Anaconda, received his B.A. in art education from Montana State University and has had several one-man shows at MSU.

• *MO* has done "ID Guides" in the past—from mushrooms to fish to upland game birds. They have been useful and popular, and this issue's "Identification of Montana's Big Game Mammals" will no doubt follow suit. For a start, the text was compiled by **Bart O'Gara**. It provides concise and easy-to-understand information about the 11 mammals' "other" names, characteristics, habitat, food, behavior, reproduction, plus up-to-date information on status. Dr. O'Gara is leader of the Montana Cooperative Wildlife Research Unit, University of Montana, Missoula. He has hunted for over 40 years and on four continents, so his knowledge comes not only from books, but also from firsthand experience.

The guide is accurately and colorfully illustrated by **Robert Neaves**, Corvallis. His entire life has been spent studying, observing, and painting wildlife of the northern Rockies. His formal training came from the Art Institute of Chicago and the University of Montana. For 13 years, he was art director for the USDA/Forest Service. He has had numerous one-man shows and his work appears in public and private collections throughout the United States and abroad. The series of wildlife paintings featured in this issue are on permanent display at the Riverbend Athletic Club in Hamilton, Mont. For individual prints or portfolios of the series signed by the artist, contact: Western Images, 730 Hamilton Heights Rd.; Corvallis, MT 59828 (406/961-4808). The guide begins on page 13.

• "Who Are Montana's Snowmobilers?" They might be teachers or technicians, young or old, male or female, racers or dawdlers. But whatever their dissimilarities, they all have in common the enjoyment of one of Montana's winter recreational opportunities. And they're willing to work with department personnel and others clearing, marking, and grooming trails, securing landowner permission for trails, and other related tasks. **Gretchen Olheiser**'s article begins on page 26. She is chief of the Parks Division's Planning and Project Bureau and is snowmobile program coordinator.

• **Mike Logan** provides another fine example of how he combines his way with words with his skill behind a camera. Turn to "My Den" on page 29. It contains many bits of truth about the "art" of writing, including the fact that a trout stream or a duck blind is probably a better place NOT to write than a poorly ventilated den. Plus, it offers some deft touches of Logan humor. He is a teacher at Capital High School in Helena and a frequent contributor to *MO*.

• The colors of the tanager so appealingly described by **Vince Yannone** in "Montana's Most Colorful Songbird" (page 32) are just as appealingly depicted by **Karen Ray Brower**'s illustration prepared especially for this issue. Brower has bachelor's and master's degrees in biology and has lived in Butte for 2½ years. She also spent time in Bolivia and South Africa and her work has been exhibited at museums in both places. A bit closer to "home," her work can be seen at the Robin's Nest, Butte; Tatem House, Helena; Wishing Tree, Livingston; and Orvis Wild Wings, Bozeman. Her studio is also her home and her work can be seen by appointment: 10 Cedar Lake Drive; Butte, MT 59701 (406/494-4179).

• The title of the article on page 34 summarizes its content: "Montana's Noxious Weeds: A Growing Problem." As **Mike Aderhold** writes, "Across the state, at least 4.6 million acres are covered with them. They are found in every county and every city, and every man, woman, and child in the state lives within a mile of a specimen." Weeds are an insidious, perplexing, and oftentimes volatile issue. Part Two of Aderhold's article will appear in the March/April 1985 issue. He is the department's information officer for Region 1 (Kalispell).

• Special thanks to the following photographers: **Larry Dech**, Grand Haven, Mich.; **Gordon Dietzman**, Madison, Wis.; **Mike Francis**, Florida; **Neal Mishler**, Great Falls; and **Keith A. Szafranski**, Livingston.

Montana's Most Colorful Songbird

If someone asked you to name the most colorful songbird in Montana, what would you answer? Many people would name the mountain or western bluebird—it's true that the bright blue color of the male in both species attracts the casual observer as well as the veteran bird-watcher. But have you ever seen a male western tanager? He is so colorful that one might even call him gaudy.

The male has a brilliant red head and bright yellow body, with black back, wings, and tail. The female is yellow-green above and yellow below, but lacks the male's brightly colored head. However, in fall the male loses most of the distinctive red coloration on his head.

Both sexes have two wing bars made up of feathers that run from the top of the wing to the bottom, looking like white lines painted on the wings. The wing bars can't be seen when the birds are in flight, however.

Once you see one, it's difficult to mistake the male tanager for any other bird. But the female could be mistaken for other kinds of tanagers. She can be identified by her forked tail and the whitish wing bars.

Tanagers have a unique beak. It is longer and thicker than that of an oriole, but slimmer than the conical beak of the grosbeak. The fact that it is "toothed" helps the western tanager catch its primary food—insects. Studies show that insects—grasshoppers, ants, wasps, stinkbugs, and caterpillars—make up 80% of the tanager's diet. The other 20% is vegetable matter such as buds from trees and shrubs or fruit.

As its name implies, the western tanager inhabits the western United States, and it is common in western Montana. It is sometimes found as far north as British Columbia in the summer, and as far south as Mexico and Costa Rica in the winter. Because of its need for insects, a warm climate is a necessity. That's why it is found in Montana only in spring, summer, and fall.

Worldwide, there are 220 tanager species, most of which live in the humid forests of Central and South America. Four species occur in the United States: the western, scarlet, hepatic, and summer. Two occur in Montana, the western and summer, but fewer than 10 sightings of the summer tanager have been recorded in the state.

During migration, tanagers sometimes travel in flocks, but they never live in flocks like many birds. They establish a territory during nesting. Their nests, constructed from plant materials, are cuplike or domed. Tanagers choose bushes, shallow cavities, mud banks, or trees as nest sites, and build them from six to 50 feet off the ground.

They arrive in their breeding areas in late March to early June. The female lays from one to five eggs, with three eggs the most common. The eggs are pale blue and irregularly speckled with dark spots at the large end. Only the female incubates the eggs, with incubation taking about 13 days. After the young have hatched, males assist in feeding. In about two weeks, the young—which look much like the female at this time, regardless of their sex—are able to fly.

The western tanager is often seen in open and mixed coniferous woodlands. During migration in spring and fall, you may see them in other types of forests.

It is difficult to see western tanagers in their nesting habitat, but you may locate one by its beautiful song. The call, *pit-r-ick,* sounds like a healthy robin, only hoarser. If you're walking in the woods and hear such a song, take a closer look. You might be treated to a glimpse of Montana's most colorful songbird: the western tanager. ■

by Vince Yannone
illustrated by Karen Ray Brower

There is never a shortage of agricultural problems. Drought, flooding, farm prices, increasing costs, water quality, soil erosion, diseases, insect problems, etc. all compete for first place. They all affect wildlife as well. The fruits of the land have a lot in common—whether they are wheat or elk—and so do the people who manage them—whether they are farmers or wildlife specialists. The fortunes and futures of grain, livestock, and game animals ride an undulating curve. The fact that the curves are always a little out of sync gives Montanans plenty to talk about.

Lately, there has been a lot of talk about noxious weeds. Across the state, at least 4.6 million acres are covered with them. They are found in every county and every city, and every man, woman, and child in the state lives within a mile of a specimen. They follow the activities of man like a shadow.

The key words here are "activities of man." Before settlement, weeds were not a problem. Unbroken prairie sod and uncut forests left little opportunity for them to invade. The weeds that followed fires and other natural disturbances were native species that had evolved over thousands of years to fill a particular niche in the ecosystem.

But the opening of the West, the homesteading era with its subsequent land abandonment, and the drought of the 1930s all opened the door to problems such as soil erosion. Weeds—which are actually the first step in nature's healing process—invaded vast areas, helping to keep the soil in place and to at least partially abate the land destruction. In nature's scheme of things, weeds are pioneers in a natural chain of events that normally, given time (sometimes centuries), will lead to a more stable condition.

But many of the weeds that eventually invaded areas disturbed by man were not native plants. Exotics—plants brought in from other places via contaminated seed grains and hay and by mechanized transport of many types—gained a foothold in Montana, and it is primarily these plants with which we find ourselves locked in mortal combat today.

There are at least 2 million acres of knapweed—a plant native to Europe and Asia—spread across Montana today. A quarter-million acres of this weed are found on national forest lands, 90% on the Lolo and Bitterroot National forests. It is the most serious range weed west of the Continental Divide. Canada thistle, which is not native to Canada but a fugitive from Europe, now exists on over 650,000 acres and is the No. 1 weed in small grain crops east of the divide. Leafy spurge covers 550,000 acres in Montana and is a rapidly spreading and persistent problem on both sides of the divide. Last year, losses due to weeds in Montana were estimated at *over $70 million.*

A weed is essentially a plant growing where it is not wanted. We share a complex planet with about 30,000 plants; each one could, in one situation or another, be called a weed. From an agricultural point of view, weeds compete with other plants for moisture, food, light, and living space. Cultivated crops are subject to competition from more than 200 different weed species. Each year, from 10 to 50 different weeds may appear in a given field, lowering the yield and often affecting the quality of the crop. Some weeds produce an off-flavor in animal products, or can be poisonous or actually injurious to livestock. Of course, all of these impacts affect the price of farm and ranch products in the marketplace.

Some weeds affect wildlife in much the same way. They lower the ability of a given area to carry wildlife by displacing some food and cover plants. Large areas of undesirable plants can put more pressure on preferred species, contributing to a declining range condition.

Say it were possible to ask a variety of people with different perspectives to rank the vegetation of Montana. They could develop lists according to economic and aesthetic value; the worth of a plant as food for man, livestock, and wildlife; the ability of a plant to exist with other species, etc. The plants at the bottom of each person's list could be called weeds. The plants consistently at the bottom of everyone's lists could be called noxious weeds.

Plants are deemed noxious by consensus. In 1969, the Montana Legislature formally selected five statewide noxious weeds: Canada thistle, wild morning glory, whitetop, leafy spurge, and Russian knapweed. The law also allowed county commissioners to declare other plants nox-

A MONTANA'S NOXIOUS WEEDS: Growing Problem

story and photos by Mike Aderhold

Spotted knapweed (above) is Montana's No. 1 weed problem. It has been declared noxious by most counties, but it is not one of the five on the statewide list of noxious weeds. In a single season, wild morning glory (below) can cover an area 17 to 18 feet in diameter.

ious, and at least 28 other species have been added by various counties. Oddly, the current No. 1 problem is spotted knapweed, which has been declared noxious by most counties, but is not one of the five on the statewide list.

It's crucial to remember that all of the state's noxious weeds are exotics. They are plants introduced from Eurasia, and they thrive without the host of predators, parasites, and other competitors that keep them in check in their native lands. All five are perennials (long-lived plants that have many adaptations for pioneering and persisting). All of the plants devote huge amounts of energy to reproduction. They have plenty of seeds that mature quickly, travel easily, grow rapidly, and can remain dormant for long periods. These plants are physiologically tough and can handle high and low temperature extremes, very poor soils, and extreme drought.

Control of noxious weeds has been attempted since the Dust Bowl days of the 1930s. Thousands of hours and thousands of dollars have been spent, and we seem to be further behind than when we started. Why?

One reason is simply the nature of the plants we are trying to control. By its roots alone, a single Canada thistle plant may spread over a circular area 20 feet across in a single year. When these roots are cut or broken into pieces, each piece is capable of developing new plants. Its windborne seeds can germinate in eight days and grow to a fully developed flowering plant in seven weeks.

Knapweed, both Russian and spotted, has a root system that can grow to a depth of eight feet the first year and down to 23 feet in two years. A square yard of spotted knapweed can produce over 150,000 seeds. The plant can discourage competition by producing a growth-inhibiting chemical called cnicin.

Leafy spurge has a woody root with numerous buds just below the ground's surface that can develop new shoots when the main stem is destroyed. It can sink a taproot down more than 15 feet, and its three-celled capsules can propel a seed from 12 to 15 feet from the plant.

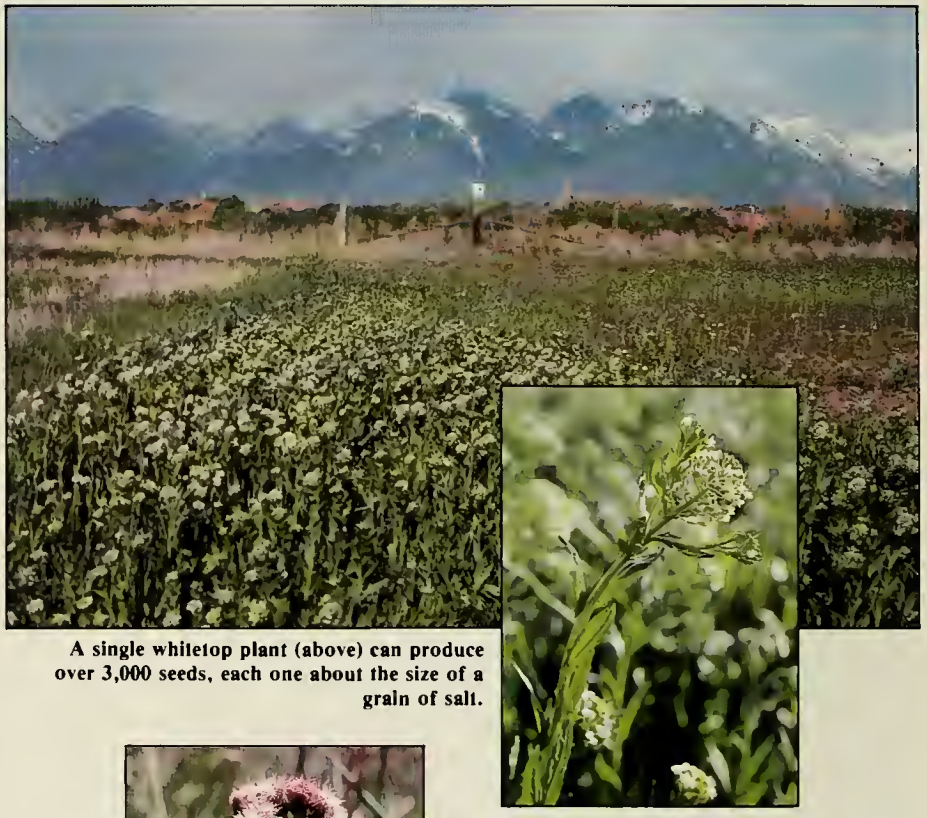
Each whitetop plant can produce over 3,000 seeds about the size of a grain of salt, and it is also capable of spreading by its roots.

In one season, morning glory can cover an area 17 to 18 feet in diameter. Its seeds are so tough that in a laboratory, dormancy is sometimes broken by soaking them for an hour in concentrated sulfuric acid.

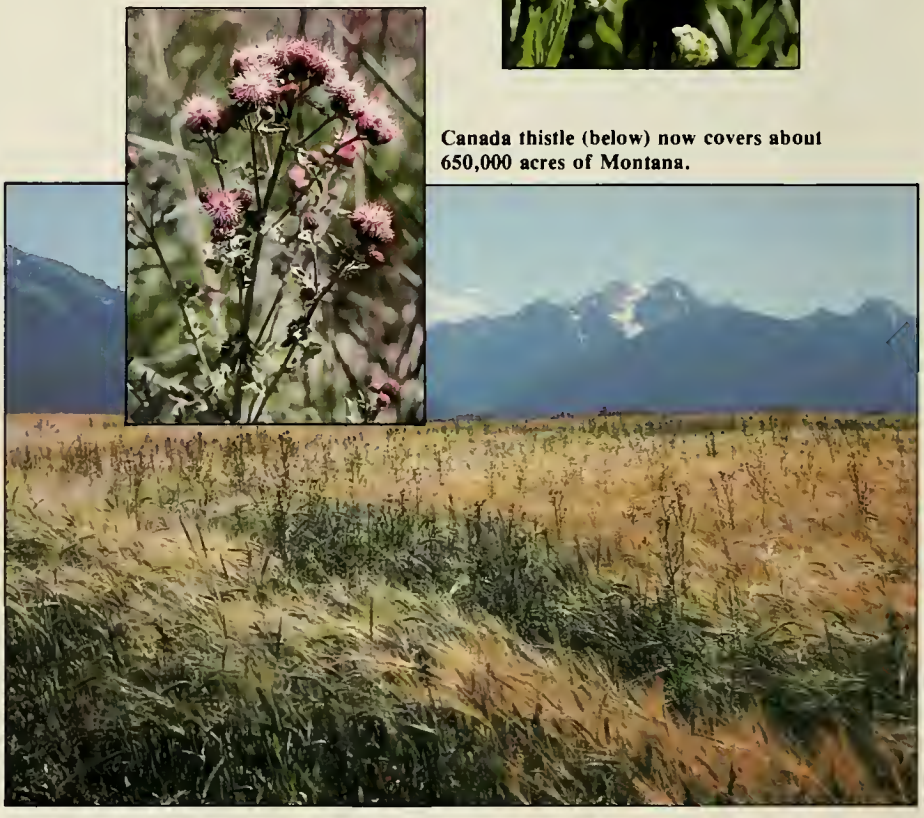
A second reason we are losing ground is because we now have more disturbance—roads, construction, vehicle use, active farm machinery, small land holdings, backyard horses, off-road travel, etc.—than ever before. We are mistreating the land, and "weeds" are nature's way of beginning the healing process.

Third, we are losing ground because our control programs are still hit and miss, leaving areas which are controlled vulnerable to continual contamination from those areas where weeds are NOT controlled. Historically, those programs have narrowly focused on chemical solutions that drained funds and attention from biological control alternatives and research. Also, control programs usually do not affect areas where the seeds have remained dormant in the soil—sometimes for years.

There seem to be four hurdles to correcting the third situation. The first involves a simple information and education effort. There is still relatively little popular understanding of the problem and control of noxious weeds. Despite 40 years of control effort, fewer than one in 100 Montana adults can name the five state noxious weeds and recognize the plants when they see them. Few people appreciate the need for control or understand the effort required. Without such popular understanding, there will never be the support and financial backing needed to turn the problem. And because noxious weeds express themselves only during the five-month growing season, there is a tendency to set the issue aside every winter.



A single whitetop plant (above) can produce over 3,000 seeds, each one about the size of a grain of salt.



Canada thistle (below) now covers about 650,000 acres of Montana.

Two other hurdles lie at opposite extremes of the current thinking on weed control. The pessimistic extreme holds that it's already too late. The benefits of a solution will not outweigh the high costs of control. These pessimists contend the worst

Leafy spurge is a persistent problem on both sides of the Continental Divide.

areas should just be written off. Proponents of this view usually proceed with a litany of four or five dozen other weeds "with the same potential as knapweed." All of this leads the uninitiated to believe noxious weed control is something akin to controlling nuclear fission. Since few are interested in becoming involved with an impossible situation, many simply turn away from the issue.

The optimistic view holds out continual hope for a panacea—a single cure-all solution. Some maintain that all that is needed is a truckful of money and a tank car train full of herbicide. They view the solution as hustling the taxpayers for the first, and running over the environmentalists with the second.

Both views reflect the human tendency to simplify. More money is needed, and some herbicides are relatively safe and effective tools, but there is now clear agreement among weed control specialists that no single solution exists. There is also agreement that living plant communities are vulnerable to change, and there is hope for practical control of our weed problems and a turn in the current growth curve.

A fourth hurdle is the old bugaboo about herbicides. Are they environmentally safe? Despite all the assurances in the chemical literature, there are still those who argue against their use. There seem to be plenty of "experts" on both sides of the issue. If the public could be given a straighter answer on this subject, it would make use of chemical tools much more effective.

What is needed now is popular resolve, coordination, public education and information, and on-the-ground demonstrations of successful efforts that can be applied in other areas.

The department can document a weed control effort going back more than 30 years. But, as across much of the rest of Montana, it began on lands that were afflicted by a multitude of abuses. The subsequent effort was hit-and-miss and uncoordinated, more dependent on the personality and background of the local wildlife range manager and the condition of the local budget, weed board, and weather situation than on a standard of control. This left some state holdings in good shape and others in need of a lot more weed control work.

As the weed infestations increased, more attention was given to the subject. In 1982, the department developed a weed control policy that formally recognized that noxious weeds can have an impact on wildlife and that the department, as a responsible land steward and good neighbor, needed to do all it could to help with the problem. A program was developed to analyze and evaluate noxious weeds on every one of the department's 375 sites.

During 1983, a general control plan was drafted and work started on developing a weed management plan for every wildlife range and state recreation site in Montana. Most of these plans have now been completed and control efforts are under way. Our objective is to prevent, to the extent feasible, the reproduction and distribution of agriculturally undesirable plant species on and from department-managed land.

The department is now turning out radio and TV public service announcements on weed control and has already produced written and visual material on the subject. During the upcoming legislative session, Director Jim Flynn will ask for authority to spend an additional $60,000 of the sportsman's money for increased on-the-ground control efforts and more informational material.

The Montana Departments of Agriculture and Livestock will lobby for a state weed control coordinator and funds to encourage a statewide inventory and control plan linking efforts at the county level.

Determination to control noxious weeds is growing. The Montana Weed Control Association has been reorganized to expand its activities and involve more people. Montana State University is receiving a new $4.6 million greenhouse that will add to its capacity for weed control research, and its Plant and Soil Sciences Department is now publishing newsletters on controlling leafy spurge and knapweed. Many county extension agents are planning weed control tours for next summer.

Part Two of this article will be published in the March/April 1985 issue of *Montana Outdoors*. It will detail some of the latest control findings, resources available to those interested in controlling weeds, and progress in the department's control efforts. ■